

DECEMBER
1952

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for men who manage

CHEMICAL PROCESSING

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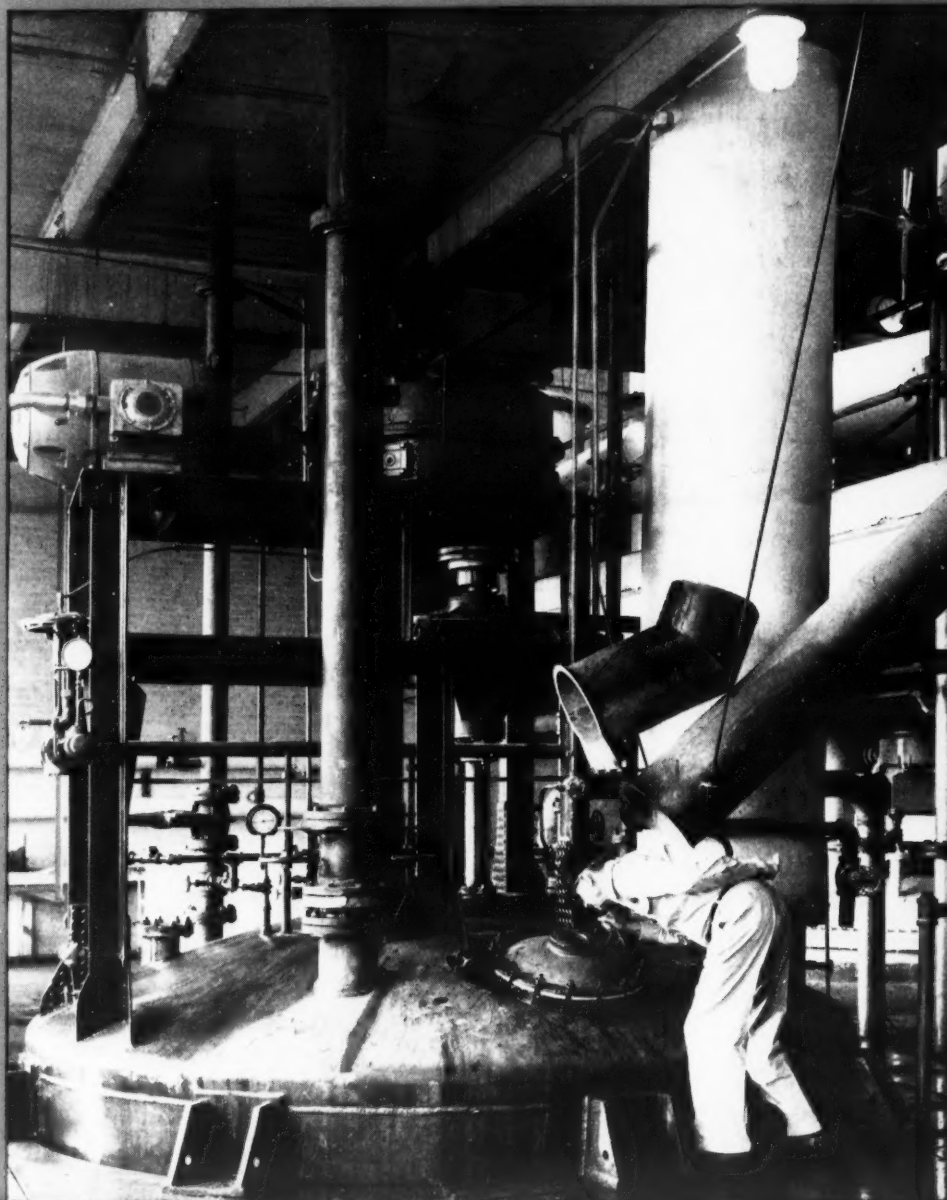
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The Cover Picture

Top of 7800-gal synthetic
resin kettle at Reichhold
Chemicals in Detroit. Weigh
tanks are used extensively
at plant, even for molten
phthalic anhydride Page 6

PUTMAN PUBLISHING CO., CHICAGO

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To serve the growing needs of the light metal industry, Baker & Adamson has recently inaugurated commercial production of high-purity Potassium Titanium Fluoride at its B&A Works, Marcus Hook, Pennsylvania. This marks another step forward in B&A's long-term program for the production of a wide range of inorganic fluorides in tonnage quantities.

For more than two decades Baker & Adamson has conducted extensive research in the field of fluorine chemistry. Today, it is geared to produce virtually any inorganic

fluorine chemical that Industry might require. Listed below are the many fluorine compounds B&A now offers in commercial quantities. Many others are in the development stage.

If your present or projected operations call for Potassium Titanium Fluoride, or any of the other products listed below, make B&A your source.

For further information, check those that interest you and return the coupon clipped to your company letterhead.

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COMMERCIAL
QUANTITIES

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- ☐ Potassium Fluoride

DOUBLE FLUORIDES

- ☐ Potassium Chromium Fluoride
☐ Potassium Titanium Fluoride

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☐ Chromium Fluoride
☐ Copper Fluoride

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☐ Indium Fluoborate

☐ Lead Fluoborate

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☐ Stannous (Tin) Fluoborate

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- ☐ Boron Fluoride Gas
☐ Boron Fluoride-Diethyl Ether Complex
☐ Boron Fluoride-Phenol Complex
☐ Sulfur Hexafluoride

HALOGEN FLUORIDES

- ☐ Chlorine Trifluoride

Name _____ Title _____

Company _____ Address _____ CP-12

When inquiring check CP 6490 on handy form, pgc. 2-3

"That's Interesting"

Rebound analysis

An instrument which can detect as little as one-millionth of one-millionth of a gram has been announced by Stanford Research Institute's bulletin *Research for Industry*. It is capable of identification and relative measurement of minute quantities of elements present in the surface of a material. It performs by "bouncing" high velocity protons of the atoms composing the surface of a sample, into a spectrometer which sorts them according to their rebound velocities. Since the proton's velocity will depend upon the weights of the atoms from which they "bounce", the various velocities coming from a bombarded surface indicate which elements are present. Moreover, the relative numbers of protons reveal the proportional composition of the surface.

Safe application of insecticides

Plans are being arranged by Julius Hyman & Co. for a conference with the Civil Aeronautics Administration to discuss the general subject of safe application of insecticides. The proposed meeting will include formulators, growers, and aerial applicators. A nationally known authority will address the group on the medical aspects of aerial application of insecticides. The discussion topics are intended to impart useful information to users of insecticides in the hope that mutual benefit will result.

Corroded identification plates restored by etching

An acid etching treatment has been used on identification plates to restore numbers and lettering which have become corroded after several years exposure. Such information is frequently essential for renewal of operating license or insurance for boilers and other power equipment.

According to engineers at Sam Tour & Co., Inc., New York, N.Y., the area on which information is known to exist is first cleaned with solvent to dissolve layer of surface scale. Then, area is treated with acid solution. Success of the method depends on the special response of cold-worked steel to acid etching. Thus, because the die stamping of numbers on metal will cold-work the metal, the numbers can be restored despite subsequent corrosion or abrasion.

Counters sold "over the counter" in atomic instrument store

Public interest in "counters," and other radioactivity instruments has led to the opening of the world's first atomic instruments department store at 489 Fifth Avenue in New York. Among the instruments offered for sale there by The Radiac Company is their "Scintillometer" a device several hundred times as sensitive as the Geiger counter. It is so sensitive that it can detect the minute radioactivity normally present in blood. (*Instruments Magazine*)

Fill bottle with tap water squirt out distilled

A portable de-ionizer that will instantly yield distilled water is reported in F. D. Snell's *The Chemical Digest*. The polyethylene bottle is filled with tap water, which passes through a synthetic resin filter when pure water is needed. A 2 oz filter yields about 20 gal pure water before its color changes, showing exhaustion.

(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 15 December, 1952 No. 12

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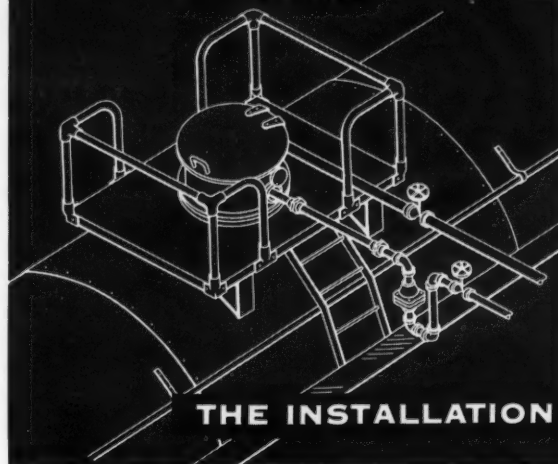
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Are Your Check Valves Cutting Costs This Way?

...on Corrosive Fluid
 for instance



THE INSTALLATION

Crane Steel Vertical Ball Lift Check Valve in air pressure line to chlorine tank car, The Mead Corporation, Chillicothe, Ohio.

THE HISTORY

Unloading chlorine tank cars by pressurizing is common practice. But, formerly, it wasn't safe for this mill. When the compressor was shut down, chlorine would back up into the air system.

Corrosion product would form on the working parts of the check valve in the air line. The disc would stick in open position, letting the chlorine back up. This meant frequent dismantling of the check for servicing. It meant a lot of extra cost in time, labor and unloading delays.

But the trouble was stopped with a Crane Steel Vertical Lift Check. Its polished ball disc of solid Exelloy doesn't stick; always seats tight. For more

VALVE SERVICE RATINGS

SUITABILITY:

Doing what's needed

FEATURES:

Non-sticking ball disc

CORROSION-RESISTANCE:

Shows no effects of Chlorine

SERVICE LIFE:

Still O.K. after 3 years

MAINTENANCE COST:

Zero - valve never out of service

OPERATING RESULTS:

*No loss of Chlorine -
 No unloading delays*

AVAILABILITY:

Regular Crane product

than 3 years this check has never failed to stop back-flow, and still it's good as new.

THE VALVE

Crane No. 3692XS Cast Steel Vertical Ball Lift Check. Compact and sturdy, with heavy metal sections. Has leakproof male and female joint with corrugated soft iron gasket. Ball disc is solid hard Exelloy, highly polished, with guided seating to integral seat ring. Sizes up to 2 inches. Consult your Crane Catalog or Crane Representative for full details.



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**the chemical processor
and his chemical
editor**

Extremely rapid growth of the chemical processing industries means an increasing demand for NEWS (processing ideas and know-how). It is true that each processor is being called upon to supply more NEWS, but it is also true that the same processor is using this same type of NEWS to make his developments possible. It is a very profitable circle!

NEWS that a processor supplies the editor goes into the editorial clearing house of ideas for the chemical processing industries — for all processors to draw upon to their own specific advantage.

The editor tries to be the catalyst by means of which the industry advances as a whole. His purpose is to enable the chemical processing industries, and the men who manage those industries, constantly to improve their operations — constantly to advance to more effective accomplishments.

To achieve this purpose, the editor is taking the busy processor by the hand on trips into the field. By means of such "field trips", the processor learns about processes, materials, and equipment — and their applications — quickly and without leaving his plant.

Not only do these field trips help with technological information and know-how, they also help the processor perfect the conditions under which he works, and help him acquire greater enthusiasm and more satisfaction in doing his respective job.

In the strictest sense, the editor actually lightens the burden on the busy processor by taking over the task of reporting. The chemical processor's best friend is his chemical editor. It makes for a very profitable circle!

M. Bruce Smith

M. Bruce Smith
Associate Editor

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MCA's Safety Committee Works for the Chemical Industry

MR. ALEXANDER J. WUERTZ,
Secretary, General Safety Committee,
Manufacturing Chemists' Assn., Inc.

Received AB and MA from University of Nebraska in 1914 and 1916. Research Fellow toward PhD degree at University of Minnesota, 1917-1918. Was Senior Instructor in Organic Chemistry at Iowa State College.

Held following positions at Du Pont Company from 1919 through 1950; Research Chemist; Head of Anthracene Div., 1931-33; Assistant Director and subsequently Acting Director of Carrollville Research Laboratory, 1935-38; Division Head, Anthraquinone Div., Jackson Laboratory, 1938-43; Manager of Foreign Technical Service Section, Organic Chemicals Dept., 1943-49; Special Technical Assistant to Research Manager of latter department, 1949-50.

Mr. Wuertz retired August 1, 1950. He holds over fifty US and foreign patents assigned to the Du Pont Company. He is presently Secretary of the General Safety Committee of MCA.

THE chemical industry has consistently maintained a higher safety performance than the average for all industry, in spite of the fact that many of its operations involve handling large quantities of materials that are toxic, flammable or corrosive. According to a 1950 survey conducted by the National Safety Council, the accident frequency for the chemical industry was 5.8. For the same year the frequency rate for all US industry, according to the Bureau of Labor Standards, was 14.7.

However, a recent study of public opinion toward the chemical industry indicates that the public is not convinced that chemical plants offer safe working conditions. In answer to a question as to which of several major industries mentioned "is safest and healthiest to work in," 34 per cent of the respondents named airplane manufacturing; 38 per cent automobiles; and only one per cent mentioned the chemical industry.

In answer to another part of the same question, "Do you think of any of these industries as being dangerous or unhealthy to work in?" 53 per cent of the people name chemicals. Next highest was steel, mentioned by 18 per cent. In other words, three times as many people believe that chemical manufacturing is hazardous.

Naturally, expansion of the industry in the early part of World War II emphasized the need for modern safety programs and for material to train and educate new employees. Responding to this need, the Manufacturing Chemists' Association established a Safety Committee in 1942. From its inception the Committee's work increased rapidly. In 1945 the General Safety Committee assumed responsibility for an enlarged program. Further expansion of the membership of the Committee and its scope of activities were approved in September of this year.

One of the principal activities of the Committee is the publication of authoritative information about

(Continued on page 192)



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to improve your process?**

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AEROSOL® WETTING AGENTS

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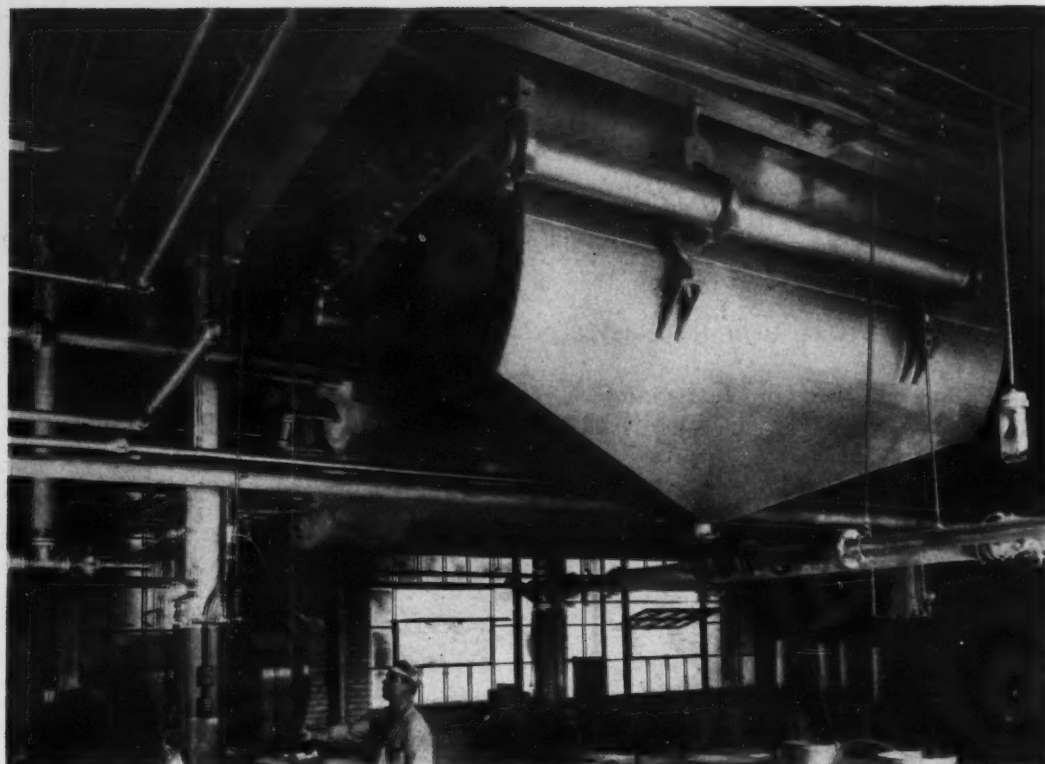


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New Solutions
OF PROCESSING PROBLEMS

Worker checks weight of a batch of material by means of suspended weigh tank. Note steam coils in cylindrical weigh tank in background, to prevent solidification of material while it is being weighed. Steam tracing on lines is also in evidence

Reichhold Handles Phthalic Anhydride in Molten Form by Weigh Tank

Eliminates unpleasant flaking job, reduces labor and melting time; printed record tells how much goes into each alkyd resin batch

PROBLEM: Most of the phthalic anhydride made in the Detroit, Michigan, plant of Reichhold Chemicals, Inc., is used right there in the manufacture of alkyd resins. Normally, the phthalic anhydride would be flaked as a final step in its manufacture, but Reichhold wanted to avoid this operation, if possible, because of these main objections to this procedure:

1) Flaking is an unpleasant task for workmen, because of the irritating characteristics of phthalic anhydride. The men had to wear masks at all times.

2) A good deal of labor would be required to operate the flaker, move the drums of flakes to another part of the plant where the resins were manufactured, and dump the drum contents through the open manhole of the resin kettle.

3) Time would be required to heat the flakes to a molten liquid after they had been dumped into the kettle.

Solution: All of these objections are eliminated by keeping the refined phthalic anhydride in the molten form and pumping it into a large steam-jacketed weigh tank when making up a resin



Weight of each ingredient of batch is automatically printed on a ticket which later takes its place in accounting files. These tickets can be quickly checked if finished batch is not up to quality standards

batch. Each charge is weighed accurately and allowed to run by gravity into a reaction kettle. A "Printomatic" weight recorder is installed on the scale. This device automatically prints the weight of each charge on a ticket, and this ticket becomes part of the permanent manufacturing and production accounting records.

Weigh Tanks for Other Materials

Reichhold makes extensive use of weigh tanks in the handling of many other types of liquid products. Vegetable oils, kept in heated tanks during the winter so they won't solidify in the cold, are batched by that method, as is phenol, which has toxic fumes and must be handled by closed system and weigh tank. Formaldehyde (because of its bad smell) and solvents such as naphthas, alcohols, ketones and turpentine (because of their flammability) are being handled to advantage in closed systems with weigh tanks.

Results: The Detroit plant finds that the accurate weigh tank method of making up batches eliminates or greatly reduces human error. It also reduces the cumulative error created when liquids are pumped from drums and a small amount of material is left inside each drum after it has been supposedly emptied. The weigh tank is operated to indicate the net weight loaded to the kettle. If it is located near the kettles, there will be a negligible amount of liquid material left in the line connecting the weigh tank and kettle. Flexible connections are used very frequently.

Workmen like the system because it gives them written protection; in the case of trouble on any given batch, the printed weigh tickets can be quickly checked.

(Information supplied by Reichhold Chemicals, Inc., Dept. CP, 601 Woodward Heights Blvd., Detroit 20, Mich.)

Temperatures of 400 to 800°F resisted by silicone paint on exhaust stack . . .

lasts for two years in spite of high temperature and corrosion laden atmosphere

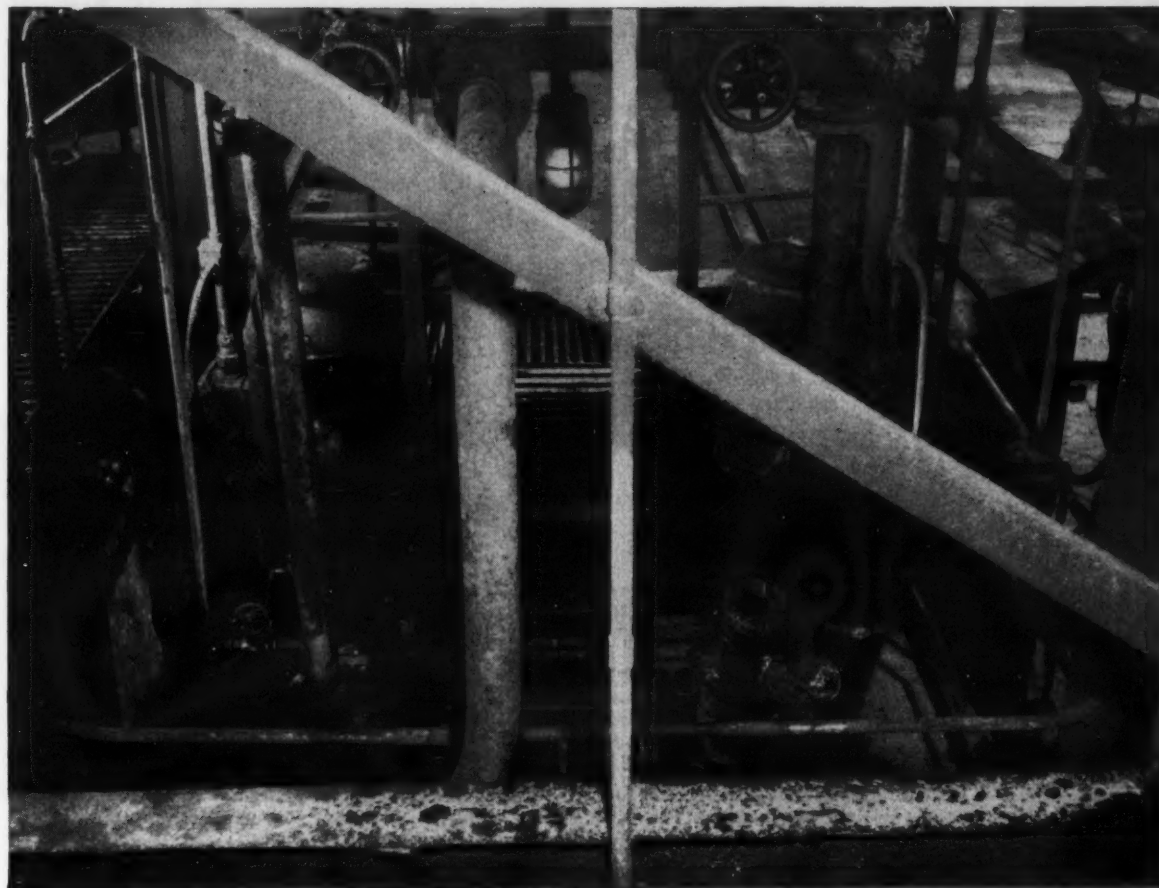
Problem: Maintenance men found it almost impossible to protect certain exhaust stacks from corrosive atmospheres and surface temperatures ranging constantly from 400 to 800°F. A number of organic heat-resistant coatings were applied but none lasted more than a few days.

Solution: A semi-organic paint, formulated with silicone resin, was applied. This type of paint retains characteristics in spite of extreme temperatures, weathering, oxidation, ultra-violet light, and other destructive influences.

An important factor in formulation of silicone paints is heat stability and relative inactivity of available pigments. Finishes pigmented with aluminum powders, zinc dust, flaked stainless steel, or powdered mica may be expected to maintain stability at temperatures ranging up to 1000°F. Black, white, and colored pigments are generally limited to applications below 700°F.

Certain precautions must be observed in applying

(Continued on page 14)



Another Case of "MORE OF THE SAME"

The LaBour Type G pumps in this picture have been in service a little more than three years, handling ammonium sulphate saturated mother liquors. Some time ago we shipped additional pumps of this type to the same user, and as this is written, more of the same are on order.

When a company has had years of experience with a piece of equipment, and continues to buy

more and more equipment from the same maker, there can be only one answer. Most of the business LaBour enjoys today comes from customers who have had previous experience with LaBour pumps, some dating back 25 years and longer.

If you're looking for the kind of dependable pump service that makes you want more of the same, you'll get it from LaBour.

ORIGINAL MANUFACTURERS OF THE SELF-PRIMING CENTRIFUGAL PUMP

LABOUR

THE LABOUR COMPANY, INC. ★ Elkhart, Indiana, U.S.A.



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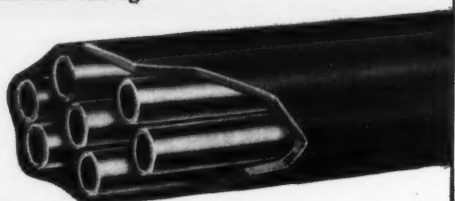
CORROSION-PROOF

Dekoron Instrument Tubing

• **DEKORON®** process of extruding a thick plastic sheath over instrument tubing makes the tubing corrosion proof . . . ends your corrosion problems *once and for all*. This means you eliminate the high cost of renewing expensive copper or alloy tubing . . . eliminate replacement costs . . . eliminate maintenance . . . conserve critical materials. Dekoron corrosion-proof instrument tubing is available in three different forms to take care of virtually any requirement.



DEKORON INSTRUMENT TUBING. Extruded plastic coating over metal tube makes it impervious to moisture, corrosion, salt air, oils, acids, and alkalis. Available in straight lengths up to 20 ft., coils up to 1000 ft., or as coating service for customers' tubing.



IMPERVAPAK METL-COR. Instrument tubing harness composed of 4, 7, or 10 copper or aluminum tubes over which is extruded thick coating of high-molecular-weight polyethylene. Available in lengths up to 100 ft.

IMPERVAPAK POLY-COR. Composed of 4, 7, 10, 14, or 19 flexible polyethylene tubes over which is extruded $\frac{1}{16}$ inch sheath of vinyl plastic. Tubes will carry all standard line pressures. Individual tubes are color coded for easy line identification; lengths to 500 ft.

A-6477

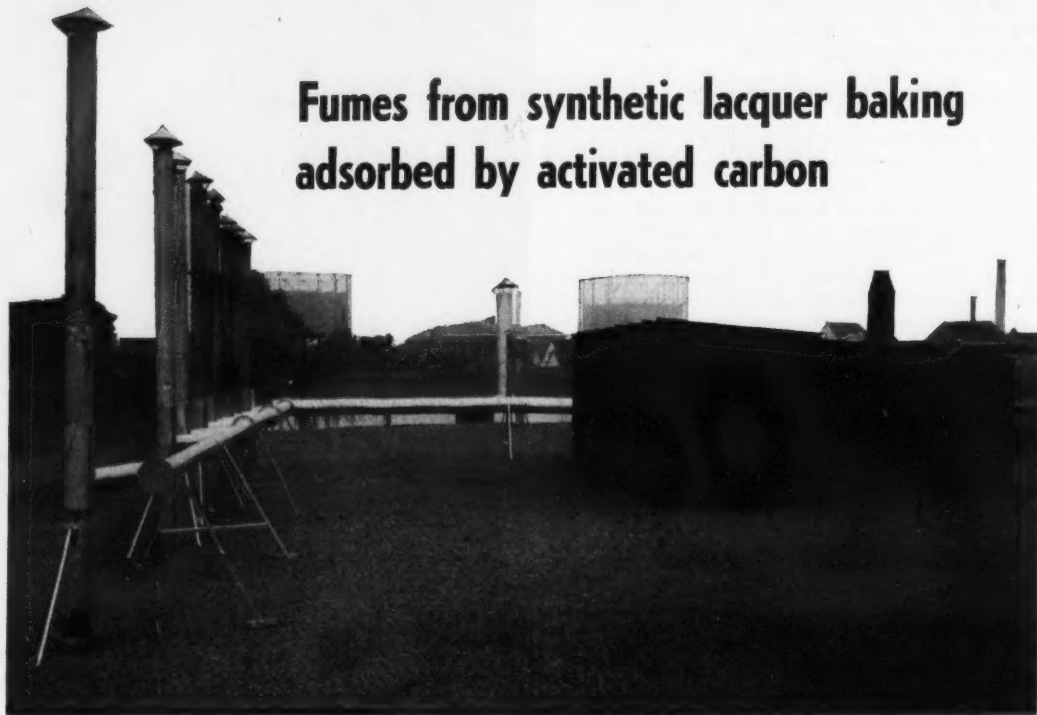


SAMUEL MOORE & COMPANY
Dekoron Tubing Division
MANTUA • OHIO

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New Solutions OF PROCESSING PROBLEMS

Fumes from synthetic lacquer baking adsorbed by activated carbon



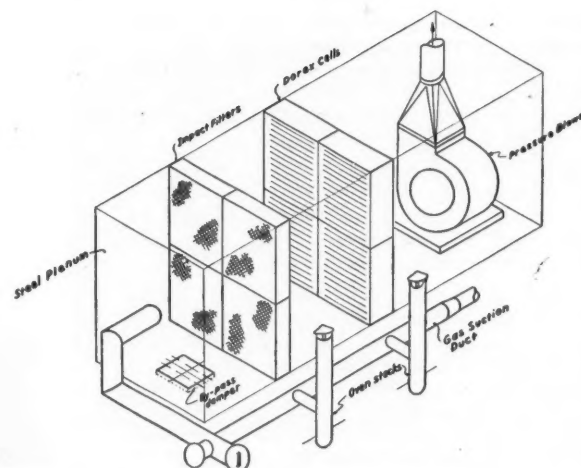
**System's 92% adsorption efficiency changes
wire mill from bad neighbor to good**

Fumes from stacks of synthetic lacquer baking ovens (left) are drawn through activated carbon filters in housing at right, where obnoxious odors are removed. In a roof installation such as this, it is necessary to insulate the housing against the rays of the sun so that the temperature inside does not get too high; adsorption efficiency drops off as temperature increases.

PROBLEM: Soon after the Ace Wire Mills, Inc., completed their new plant in Paterson, N. J., it became evident that the plant's stack effluvia contained some odorous non-combustible gases and solids which annoyed the residential neighbors. The pollution came from ovens in which synthetic lacquer is baked onto copper transformer wire at a temperature of about 650°F.

The management installed catalytic burners at the discharge point of the oven combustion chambers, hoping to eliminate the smell by completely burning all effluent gases and solids. The complaints continued however, even though there was a slight decrease in odor level. Eventually, the local health department stepped in and advised immediate action to remedy the situation.

Solution: At this point, Ace Mills called in Kevin Magee and Associates,

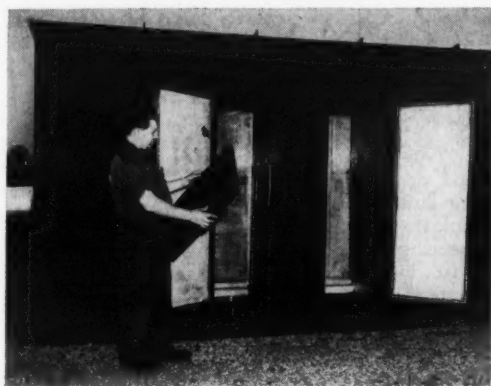


Here's how the set-up is arranged—impingement type dust filters ahead of Dorex activated carbon cells

consulting engineers of Hohokus, N. J., to decide the best means of abating the nuisance at reasonable cost and without interrupting or interfering with production.

First step was qualitative analysis of the lacquers and solvents employed, which showed that the gases generated could be readily adsorbed by activated carbon. Thus, it was decided to use this method of treatment. Other methods for masking or "neutralizing" odors were considered, but in each case were found to be unsatisfactory for the job at hand because of a combination of reasons . . . among them excessive weight, bulkiness, cost, and complicated control and operation.

Next, the quantity of gases emitted by all ovens operating together was determined as 250 cfm. From this it was determined that it would be necessary to dilute the stack gases with 5750 cfm of 95°F plant air in order to operate the system around 118°F, the temperature at which the activated carbon would be at optimum adsorption efficiency. Hence, total air flow through the exhaust blower and to the activated carbon system would be about 6000 cfm.



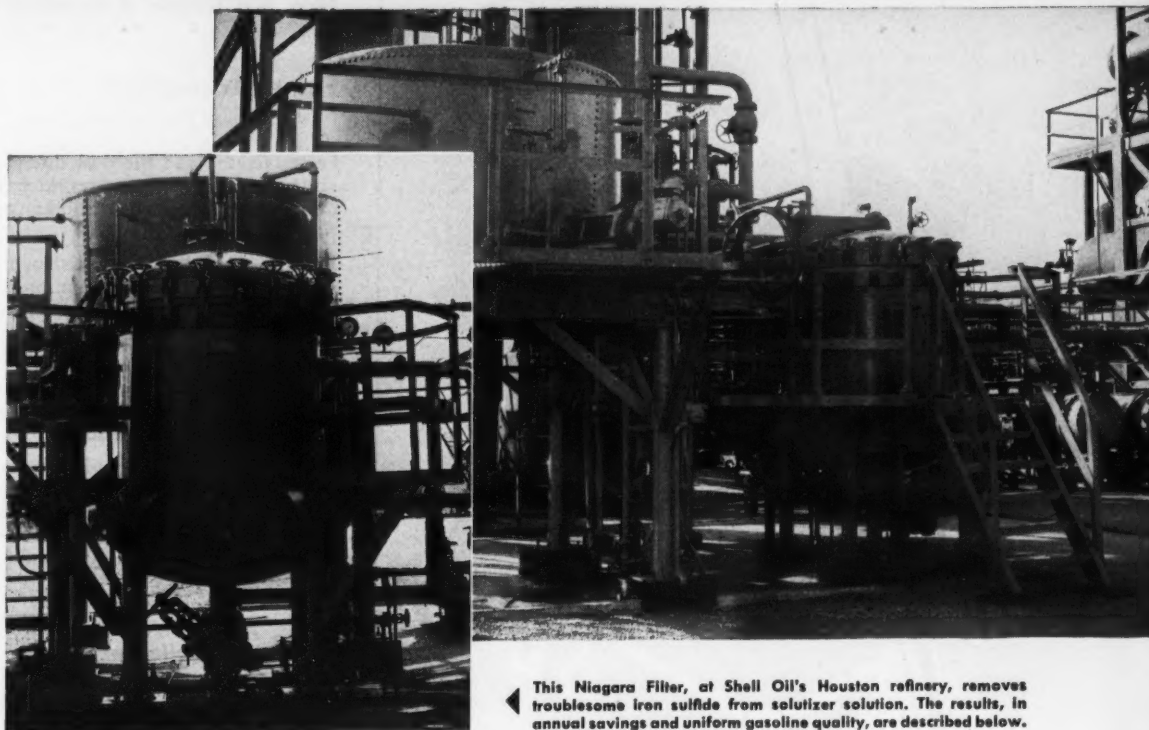
Dust filter being inspected. Dorex cells can be seen through doorway to right

An additional factor involved was the desirability of maintaining a slight negative pressure in the coating room to prevent the fumes from seeping through window and door cracks, and causing air contamination outside at street level. Care had to be taken so as not to decrease pressure in the room to a point where stack draft through the ovens would be neutralized. This required careful analysis of the equipment, as well as installation of stack, suction and by-pass dampers with locking quadrants to make possible any desired mixture within the temperature limits of the equipment.

Impingement dust filters of the cleanable metal type were installed preceding the bank of carbon filters, to remove airborne particles and thus prevent clogging of the carbon beds.

The catalytic burners are still being used ahead of the activated carbon train, even though they are not absolutely essential to successful odor absorption. They are helpful to the extent that they remove combustible matter, thereby reducing the frequency with which the activated carbon has to

(Continued on next page)



This Niagara Filter, at Shell Oil's Houston refinery, removes troublesome iron sulfide from solutizer solution. The results, in annual savings and uniform gasoline quality, are described below.

NIAGARA FILTER keeps Solutizer Solution "on-stream"

Shell Oil Company uses a Niagara Filter in its solutizer mercaptan extraction process and thereby effects "a significant annual saving."

Caustic solutizer solution is introduced into the extraction system, where it comes into contact counter-currently with the mercaptan-containing hydrocarbon fraction. The treated fraction and fat solutizer solution are withdrawn from opposite ends of the system.

A Niagara Filter was installed to remove the small amount of iron sulfide particles (averaging 20 microns) which gradually accumulate in fat solutizer solution. These insoluble materials in the system act as nuclei for troublesome emulsions and impair the effectiveness of the plant. The iron sulfide is contained in gasoline streams entering the solutizer plant.

The Niagara Filter has 16 stainless steel leaves with a total filter area of 322 sq. ft. It is delivering

solutizer solution free from iron sulfides, at a flow rate of 2700 GPH—and is doing this continually for a period of 64 hours before it is necessary to clean filter.

Continuous filtration helps to keep operation of the solutizer plant at high efficiency. Gasoline production remains uniformly high in octane number and tetraethyl lead susceptibility.

Niagara all-metal filters always save through elimination of filter cloths, simplicity of operation, increased filtration rates and long life of the stainless steel solderless filter leaves. Niagara filtration engineers are experienced in all types of filtration processes. They may be able to help you with your problems, and will be glad to test samples and tell you about pilot filter rental and other services. A letter from you outlining the problem will bring a prompt reply without obligation. Use the coupon below to order Bulletin G-447 for your files.



Niagara Filter
CORPORATION

IN EUROPE—NIAGARA FILTERS EUROPE, 36 Leidsegracht, Amsterdam-C, Holland

NIAGARA FILTER CORP., 3083 Main St., Buffalo 14, N. Y.

Please send me details of Niagara Pilot Plant Filter rental ☐; Bulletin G-447 ☐.

Name

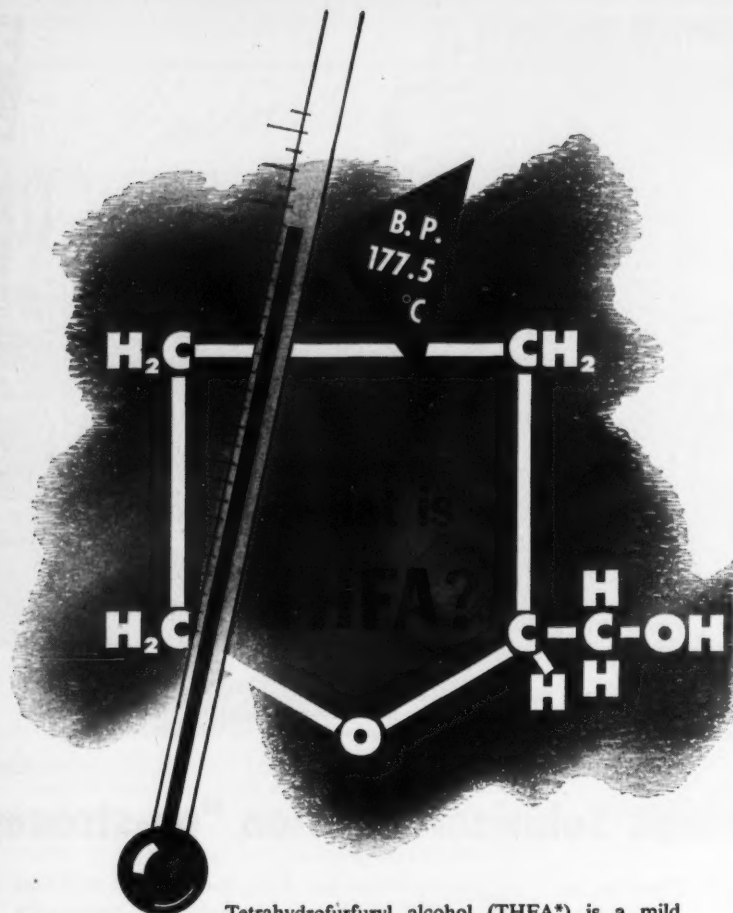
Title

Company

Address

City Zone State

When inquiring check CP 6495 on handy form, pgs. 2-3



Tetrahydrofurfuryl alcohol (THFA*) is a mild, pleasant smelling, high boiling primary alcohol containing the characteristic heterocyclic furan ring.

Its reactions are generally those of a primary alcohol. (A reaction chart is yours for the asking.) In addition to the usual reaction characteristics of a primary alcohol, THFA can be made to undergo reactions involving the ring such as ring opening to open chain compounds which in some cases may be recycled to form other important ring compounds.

USES

1. To make plasticizers such as tetrahydrofurfuryl oleate.
2. As a chemical intermediate. For example dehydration yields 2,3-dihydropyran which is in turn the precursor of such interesting compounds as 1,5-pentanediol, tetrahydropyran and lysine.
3. Solvent for dyes, resins and other interesting compounds. Those having solvent problems in connection with styrene, vinyl acetate, vinyl butyral, cellulose acetate, ethyl cellulose, nitrocellulose, "A" stage phenol-aldehyde resins and rosin would do well to investigate this solvent.

PROPERTIES OF THFA (PURE COMPOUND)

Boiling point, °C.
(743mm.) 177.5
Specific gravity,
20/20°C. 1.064
Refractive index
n_D 20/D 1.4505
Flash point
(open cup) °C. 75-80

* Reg. U. S. Pat. Off.

Write for Technical Bulletin 87-B



The Quaker Oats Company

CHEMICALS DEPT.

336K The Merchandise Mart, Chicago 54, Illinois
Room 536K, 120 Wall St., New York 5, N. Y.
Room 436K, P. O. Box 4376, Portland 8, Oregon

In San Francisco: The Griffin Chemical Company • In Europe: Quaker Oats-Grainproducent N. V., Rotterdam, The Netherlands; Quaker Oats (France) S.A., 3, Rue Pilet-Willi, Paris IX, France
In Australia: Swift & Company, Pty., Ltd., Sydney • In Japan: F. Kanematsu & Company Ltd., Tokyo

When inquiring check CP 6496 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Fume Adsorption

(Continued from preceding page)

be reactivated and the dust filters cleaned. At the same time, the burners prevent passage of gummy, unburned residue which might come from an improperly fired oven.

Results: Following initial operation and necessary adjustments of the equipment and dampers, and with all ovens in operation, an odor removal efficiency of more than 92% was obtained.

An incidental but rather important effect has been an increase in the efficiency of the ovens as a result of the constant positive draft maintained by the blower suction on the stacks.

(Information courtesy of the maker of the activated carbon cells, W. B. Connor Engineering Corp., Dept. CP, 500 Fifth Ave., New York 18, N. Y. . . . or for more information check CP 6497 on handy form, pages 2 and 3.)

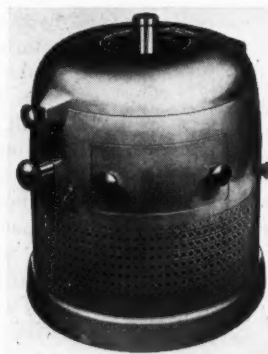
How a dust-collection system got a check-up . . .

material balances and particles size inspections show efficiency, loading, particle breakage

Chemical plants located in cities always face "Nuisance problems." Spray Drying of soaps and detergents has the inherent problem of arresting dust in the exhaust of drying air. That's why Colgate-Palmolive-Peet Company in Jersey City was seeking improved means of analyzing airborne dust in checking the effectiveness of dust collecting systems.

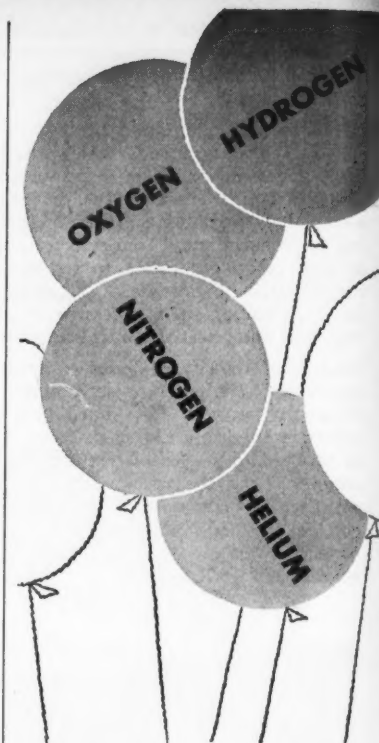
Final step in making their detergent is spray drying. The finest particles, of course, tend to be carried out in the exhaust gas. Naturally, dust collectors were

Finer particles (44 microns and smaller) are classified with device which balances centrifugal force against air current to sort them



installed to catch these particles. But low density of the dust made collection more difficult than usual. A system was evolved where primary collectors (for fine particles) and secondary collectors (for micro-particles) were operated together.

Exhaust from spray dryer runs about 5% of sprayed material. Of this exhaust, practically 100% is now recovered. But since the collection system was complicated, it was difficult to say whether any particular unit was efficient, properly loaded or operating properly. In order to make sure that they were using



MAGNOLIA AIRCO

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Magnolia Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement! Consult your nearest Magnolia Airco office for full details.



AIR REDUCTION MAGNOLIA CO.

A Division of Air Reduction Company, Incorporated
Beaumont • Corpus Christi • Dallas • El Paso
Fort Worth • Hobbs • Houston • Oklahoma City
San Antonio • Shreveport • Tulsa • Wichita Falls
Southwestern Headquarters for Oxygen, Acetylene
and Other Gases . . . Carbide . . . Gas Welding
and Cutting Machines, Apparatus and Supplies
. . . Arc Welders, Electrodes and Accessories.

at the frontiers of progress

you'll find



When inquiring check CP 6498 on handy form, pgs. 2-3

CHEMICAL PROCESSING

the best possible system, Colgate engineers devised a duct sampling system which allowed them to take samples from all lines of the collection system. Since samplers split out a known fraction continuously, material balances can be made by operating all sample stations for known periods and comparing inputs and outputs. In this way efficiency and loading for individual collectors is found.

But a somewhat more subtle problem exists. Air-borne particles are easily broken by impact with walls at their high entering velocity in the primary collectors. And finer dust, produced this way, is just what the collection system should not make. Size analysis of particles at each stage was thus the next logical step.

Screens are used to sort out particles coarser than 44 microns. Particles below 44 microns are handled with a Micro-Particle Classifier. This device applies centrifugal force to particles and, at the same time, opposes this with an air current. Samples of about 10 to 15 grams of dust are put into classifier and run through in about three hours.

Sample is run at 6 to 8 different throttle openings — cutting out a range of particle sizes at each throttle opening. Each "cut" takes about 20 minutes to run.

By comparing particle size going to a collector with that coming out, operators arrive at a good idea of breakage. Tests run under varying conditions show factors affecting breakage. When this information is compiled with that from material balances it is possible to rate individual collection units, determine loading factors, and effect of operating conditions on efficiency. These check-ups have provided information which is used in designing collection systems at Colgate.

(Micro-Particle Classifier is a product of Harry W. Dietert Company, Dept. CP, 9330 Roselawn Avenue, Detroit 4, Mich. . . . or for more information check CP 6499 on handy form, pages 2 and 3.)

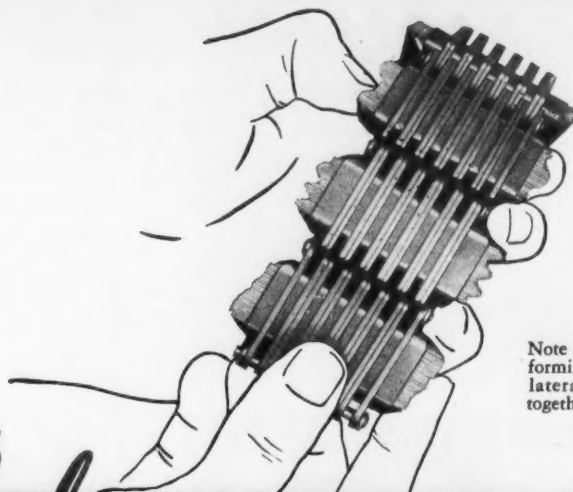
Four methods of analysis adapted to instrument

Four additional methods of analysis have been adapted to versatile instrument which measures concentration in any of three different ways. Two of the methods have been adapted from those published by ASTM. One describes procedure for photometric analysis for iron in aluminum alloy in range from 0.03 to 2.0%. The second is a rapid, convenient photometric method for copper in aluminum alloy from 0.02 to 12%.

A nephelometric method for determining sulfates in water eliminates precipitation, filtration, ignition, and weighing of barium sulfate.

Fourth method is a fluorometric analysis of acid-soluble aluminum in steel, by which the fluorometric measurement of the aluminum complex determines concentration from 0.001 to 1.0% without precipitation and ignition.

Methods are issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 6500 on handy form, pages 2 and 3.



Note how slats in the self-tooth-forming chain are free to move laterally—either singly or together.

Only the P.I.V. variable speed drive uses SELF-TOOTH-FORMING CHAIN to give you positive, stepless speed changing

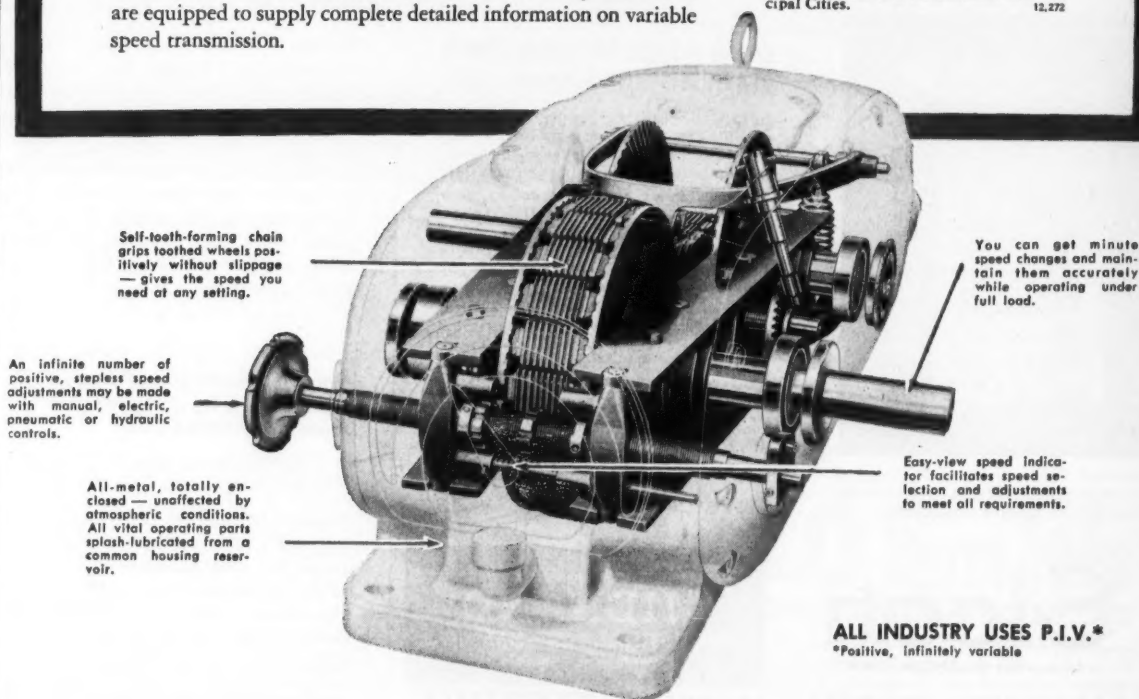
The operation of Link-Belt's P.I.V. Variable Speed Drive is not dependent upon friction for power transmission.

That's because only Link-Belt's P.I.V. has the self-tooth-forming chain that allows *positive*, stepless speed adjustment.

If you've been looking for exact speed changing that will deliver full rated horsepower to your machines, it will pay you to call your nearest Link-Belt branch office, as our representatives are equipped to supply complete detailed information on variable speed transmission.

LINK-BELT
P.I.V. VARIABLE SPEED DRIVE

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12,272



Self-tooth-forming chain grips toothed wheels positively without slippage — gives the speed you need at any setting.

An infinite number of positive, stepless speed adjustments may be made with manual, electric, pneumatic or hydraulic controls.

All-metal, totally enclosed — unaffected by atmospheric conditions. All vital operating parts splash-lubricated from a common housing reservoir.

You can get minute speed changes and maintain them accurately while operating under full load.

Easy-view speed indicator facilitates speed selection and adjustments to meet all requirements.

ALL INDUSTRY USES P.I.V.*
*Positive, infinitely variable

When inquiring check CP 6501 on handy form, pgs. 2-3

Sicon in colors withstands 500°

SICON, THE ORIGINAL
SILICONE HEAT-RESISTANT
FINISH, IN GLEAMING WHITE AND TAN
PROTECTS SURFACE OF HOME INCINERATOR

*Here's what the makers of
Calcinator say about SICON*

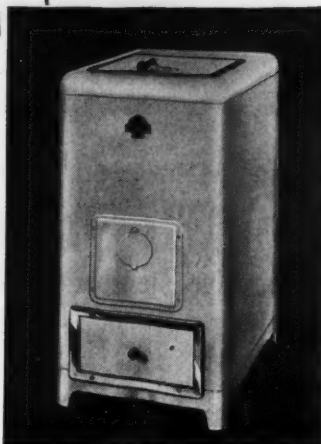
"In keeping with the high standards we wished to attain for Calcinator, we chose 'Sicon'.

Under rigid perfection tests 'Sicon' was found to have:

1. High resistance to heat when exposed to temperatures ranging from 400 to 500°F.
2. Exceptional color as well as gloss retention qualities.

In addition, only 'Sicon' had good inherent qualities of adhesion and film stability."

W.M. Milbourne, Sales Mgr.,
Calcinator Division
Valley Welding & Boiler Co.,
Bay City, Michigan



Deluxe Calcinator, the home incinerator so smart looking that it can be placed right in the kitchen. Finished in SICON White.

SICON STANDS UP WHERE OTHER HEAT-RESISTANT FINISHES FAIL

In case after case, for product after product, SICON has proved to be the *only* heat-resistant finish to pass all tests—in the laboratory and on the production line. Sicon, in smart decorative colors, now opens up a new horizon for design engineers, because only Sicon makes it possible to combine "eye appeal" with retention of color and gloss in the presence of sustained heat.

No matter how rigid your heat-resistant finish requirement, try Sicon, the original silicone-base finish that has revolutionized product finishing wherever high temperatures pose a problem.

Write for brochure
and complete
engineering details.



Standard Calcinator, for utility room or basement location, features latest advances in incinerators. Finished in SICON Tan.

Sicon

Silicone-Base Heat-Resistant Finish

VARNISHES • ENAMELS • LACQUERS • SYNTHETICS

manufactured exclusively by

MIDLAND
INDUSTRIAL FINISHES CO.
Waukegan, Illinois

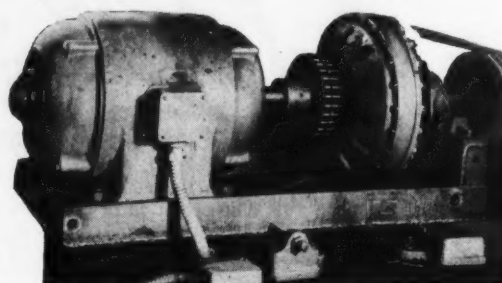
NEW SOLUTIONS of processing problems

**25% smaller conveyor motor
eases starting shock,
prevents shutdown . . .**

less vibration, lower maintenance cost when 'fluid-drive' coupling installed

Problem: Heavy vibration and excessive starting loads were constantly causing shutdowns at the American Sugar Refining Company of Baltimore, where 1,400,000 lb of sugar were moved from dockside every eight hours up a continuous bucket conveyor. The raw sugar collects moisture and presents a multi-ton starting load torque, and maintenance costs were high.

Solution: A 15 hp electric motor fitted with a Twin Disc Hydraulic Coupling replaced the original 20 hp motor. The fluid "slip" cushioned out the vibration and shocks and permitted a soft, balanced start of the heavy load.



Typical power hook-up, with fluid-disk coupling placed between flexible couple (motor side) and sheave belt drive. Motor now picks up heavy initial loads quickly, without shock at the American Sugar Refining operations

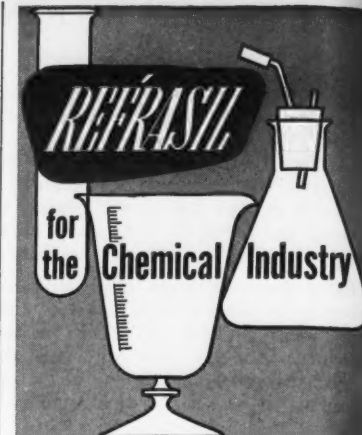
Results: Complete elimination of motor and transmission troubles due to vibrations or overloading are reported. Frequent jamming of the old drive has been eliminated. Maintenance costs are down, and less power is consumed.

(Descriptive installation reports on solution of shock load problems in various kinds of applications are available from Twin-Disc Clutch Company, Dept. CP, Racine, Wisconsin . . . or for more information check CP 6503 on handy form, pages 2 and 3.)

**Intricate parts are produced
from Teflon by compression
molding method . . .**

development should be a "boon" to the user of parts which involve costly machining

Teflon can now be compression molded into intricate parts on a production basis. Formerly material could be molded into simple forms but anything involving undercutting parts or other difficult forming details seemed impossible to achieve. With this development, expanded use of Teflon in many new applications is possible. Users of parts which have hitherto involved costly machining or for some reason seemed impossible to produce will be able to enjoy economy of production molded parts.



REFASIL...widely used today in many industries has rapidly become an important filtration and insulation material for the Chemical Industry.

This outstanding new product is a fibrous, high silica content, all mineral substance which is chemically stable, unaffected by ordinary acids, and is resistant to fire, water and moisture.

REFASIL, light in weight and versatile in use is available in a variety of physical forms as illustrated below.

IMPORTANT FEATURES

- ★ Filtration of corrosive or high temperature materials
- ★ Chemical resistance of pure silica.
- ★ Extreme temperature resistance.
- ★ Low thermal conductivity.
- ★ Good acoustical insulation.
- ★ Catalyst or Catalyst support.



CONSULTATION SERVICE

Without obligation to you, our engineers are available for consultation regarding your high temperature or filtration problems. REFASIL is produced in a variety of forms for your needs. Write us today, or simply attach this ad to your letterhead and mail today for illustrated literature.



REFASIL REPRESENTATIVES

Eastern: Fred W. Muhlenfeld 6459 Loch Hill Rd. Baltimore 12, Md. Volley 3135	Texas, Okla. & Kansas: Thomson Engineering Service 708 Hampshire St. Fort Worth 4, Texas Fortune 3340	Midwest: Boris L. Wiedle 2319 West 27th St. Indianapolis 22, Ind. Hickory 6685
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THE H. I. THOMPSON COMPANY
1723 CORDOVA STREET
LOS ANGELES 7, CALIF.

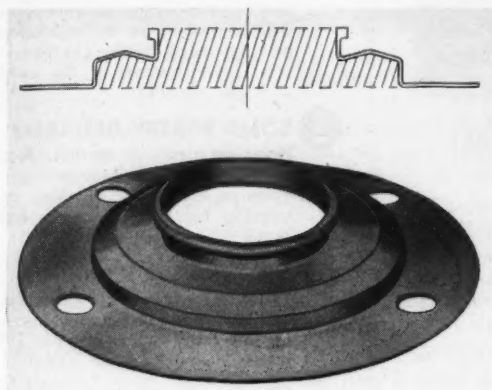
When inquiring check CP 6504
on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

When DuPont Company introduced Teflon, it immediately gained wide acceptance due to its combination of desirable properties. Material is chemically inert, has heat-resistance in continuous service up to 500°F, and has low temperature toughness as low as -320°F. Erosion-resistance, low coefficient of friction, zero moisture absorption, weather resistance, non-adhesive tendency, and its dielectric properties are also desirable qualities of Teflon.

Disadvantage of material was that it could not easily be molded into difficult forms. This handicap was partly overcome by finishing molded parts by machining. Drawbacks of this procedure were excessive loss of expensive material, increased cost due to machining operations, and slow rate of production.



Pump diaphragm molded from Teflon to be used in aircraft application handling fluids which attack other materials. Note deep undercut in part

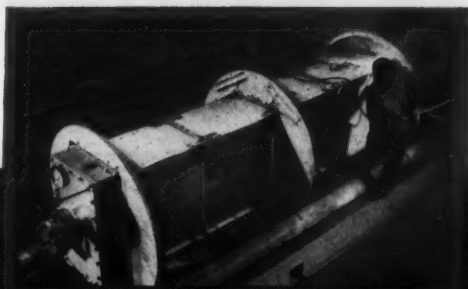
Although present compression molding procedure has not solved numerous problems, current production of intricate parts demonstrate that wider applications of material are possible. Since Teflon is only material handled by Sparta Heat-Treat Co., who developed the satisfactory compression molding method, this specialization has resulted in a wealth of experience.

(Inquiries concerning production molding of Teflon may be made to R. M. Gray, Plant Sup't., Sparta Heat-Treat Co., Plastics Div., Dept. CP, East Sparta, Ohio . . . or for more information check CP 6505 on handy form, pages 2 and 3.)

Method bonds neoprene to equipment in cold

Cold bond system provides means of bonding neoprene sheet to metal, wood, and concrete, according to manufacturer, with resulting values exceeding those obtained by vulcanizing under heat and pressure. Bonding agent actually cures rapidly at room temperature and the entire covering becomes a homogeneous mass of neoprene.

Four-page bulletin provides information on advantages, components of system, and characteristics of coatings. Bul N-4 is issued by Gates Engineering Co., Dept. CP, P.O. Box 1711, Wilmington, Del. When inquiring specify CP 6506 on handy form, pages 2 and 3.



Each heat exchanger is individually hydrostatically tested to insure against leakage during operation. While under test, the by-pass baffles are welded on the unit.

One of the many wind tunnel heat exchanger sections, ready for shipment and installation in the Langley Aeronautical Laboratory supersonic wind tunnel, Langley Field, Virginia.



New Supersonic Wind Tunnel Coolers are A. O. Smith Engineering Achievement

All wind tunnel coolers for the new supersonic wind tunnel under construction at Langley Aeronautical Laboratory of NACA, Langley Field, Virginia, were supplied by us.

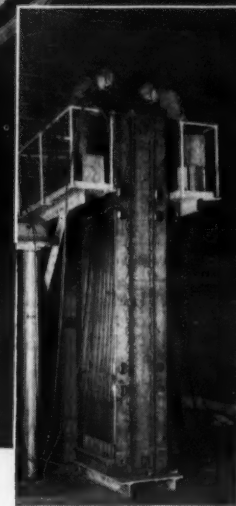
A. O. Smith engineers conceived an original design in these heat exchangers, incorporating many advantages. The most important ones are:

1. High efficiency through balanced distribution of surface and flow areas.
2. Removable tube bundles.
3. Safety from air contamination by water, through elimination of bolted joints inside the tunnel and placing all water lines and connections outside air chamber.

These and many similar features make this one of the most advanced engineering feats in cooling provision for wind tunnels.

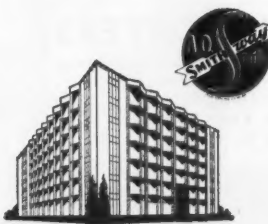
Besides manufacturing varying sizes and arrangements of heat exchangers, we also designed cooler housings, accessory equipment, and air by-pass system, calculated ducts and provided installation.

This is an excellent example of the completeness and flexibility of A. O. Smith engineering which is available to you to help solve YOUR heat exchanger problems . . . available through our nearest office, listed below.



Assembling tubes into the tube headers for one of the heat exchanger sections.

INDUSTRY COMES TO A. O. SMITH
WITH HEAT EXCHANGER PROBLEMS



Research and Engineering Building

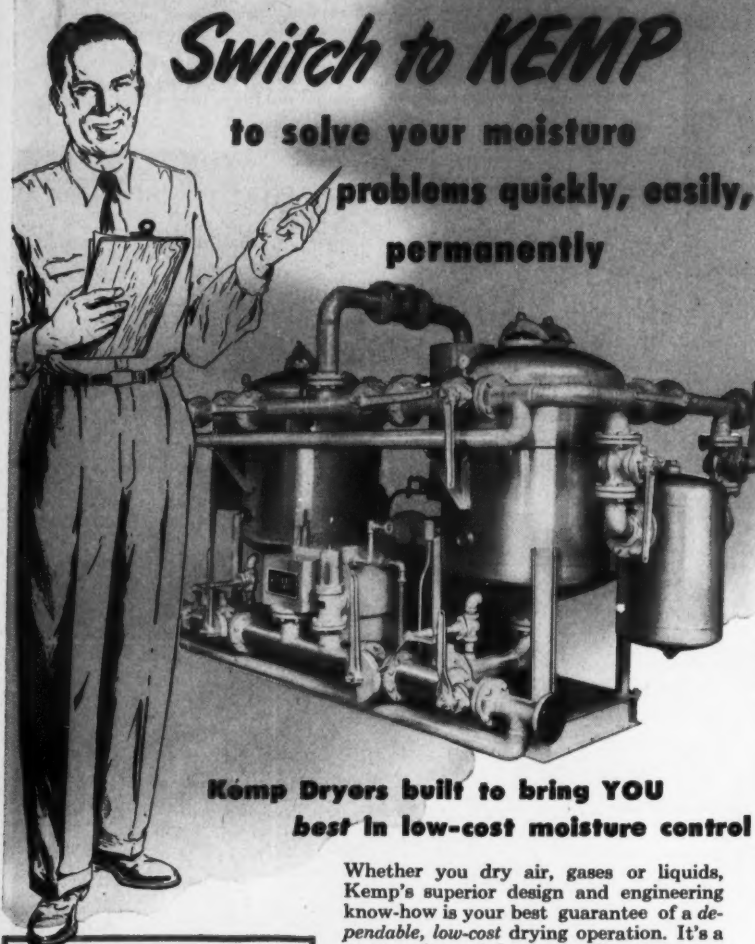
A.O. Smith

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International Division: P.O. Box 2023, Milwaukee 1, Wis., U.S.A.

When inquiring check CP 6507 on handy form, pgs. 2-3



Switch to KEMP

to solve your moisture
problems quickly, easily,
permanently

**Kemp Dryers built to bring YOU
best in low-cost moisture control**

Whether you dry air, gases or liquids, Kemp's superior design and engineering know-how is your best guarantee of a dependable, low-cost drying operation. It's a matter of record that many Kemp users are drying air, gases and liquids for as little as $\frac{1}{4}$ ¢ per mcf. This amazingly low price includes all charges for labor, capital investment and materials. And of course, every Kemp Dryer carries Kemp's guarantee of performance to meet your specifications.

Kemp Engineering Versatile

Steam, electric or gas regeneration is standard equipment with every Kemp Dynamic Dryer . . . with or without cooling units. Also, depending on your needs, you have a choice of manual, semi-automatic or fully automatic operation. In every instance, Kemp will specify the proper desiccant suitable for your operation. Chances are there is a standard Kemp design that is ideal for your plant and saves you money too.

3 BASIC DESIGNS AVAILABLE*

ORIAD—Dries air used to actuate tools, valves, instruments, etc., where drying requirements are moderate.

RADIATION COOLED—For small or medium flow rates. Offer low operating cost with maximum efficiency.

CONVECTION COOLED—Provide continuous drying capacity of air and gases at minimum cost.

*All of above in complete range of sizes with manual, semi-automatic or fully automatic operation.

KEMP

OF BALTIMORE

DYNAMIC DRYERS

For technical information and facts on how Kemp Dryers can solve your moisture problems, write for Bulletin D-27 to:

THE C. M. KEMP MFG. CO.
405 E. Oliver St., Baltimore 2, Md.



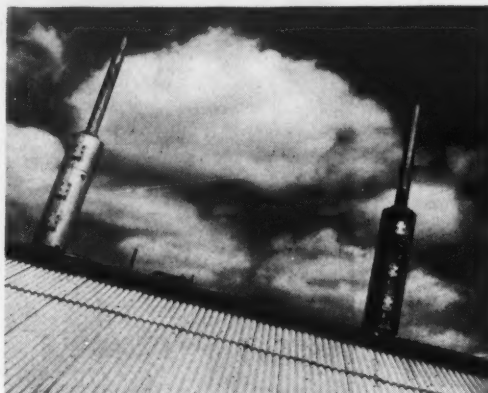
COMPRESSORS • PUMPS • VALVES • PIPE • SPECIAL EQUIPMENT
AIR-DRYING SYSTEMS • HEATING SYSTEMS • CONDENSING EQUIPMENT • SPECIAL EQUIPMENT

When inquiring check CP 6508 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Silicone Paint

(Continued from page 7)



Silicone paint on exhaust stack at left retains appearance indefinitely while organic paint on stack at right lasts only a few days

silicone finishes. Surface to be painted must be absolutely clean and dry. If corrosive conditions are excessive, primer coat should be used. Paint may be applied by either brush or spray. One coat is often sufficient but best results are obtained with two.

In spray application, first coat need only become air-dry before second coat is applied. In brush application, first coat must be cured for equivalent of 30 minutes at 500°F, or enough to prevent lifting when second coat is applied. It must not be dried so much as to prevent second coat from wetting.

Last coat should be allowed to air-dry at room temperature for 30 minutes to an hour and then cured for equivalent of about an hour at 500°F. Curing schedules, of course, depend largely upon conditions surrounding application. Curing can be accomplished in most refinery applications by simply placing painted unit back into operation.

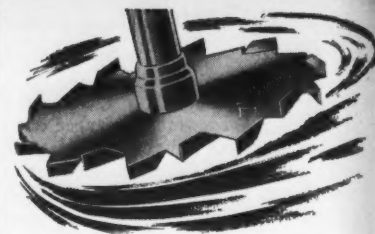
Results: Although identical in application and appearance to previously used paints, silicone base finish retained its original finish far longer. In spite of high temperatures and corrosive atmosphere, stacks did not need repainting for over two years.

(Courtesy of Dow Corning Corp., Dept. CP, Midland, Mich. . . . or for more information check CP 6509 on handy form, pages 2 and 3.)

Metallizing compression pistons means money in the bank plus time saved . . .

replacing piston costs about \$1000 and delivery's slow; they're salvaged in 2 days for \$200

A large chemical corporation faced problem of replacing their compression pistons after a nominal service life. This complete replacement would cost the company from \$1000 to \$1200 per rod and a certain amount of time, since delivery was uncertain.



read these FACTS

1 NO BAFFLES NEEDED

The Cowles Dissolver mixes your batch thoroughly without using baffles—thanks to its high speed and the speed differential between the rotary motion of the batch and the impeller.

2 SOME VORTEX DESIRABLE

Don't be afraid of vortex! Some vortex is desirable because it provides a means for checking the impeller feed in the Cowles high speed centrifugal action.

3 NO PLUGGED-UP HOLES

The Cowles Dissolver has no slots or holes that can become plugged up with large chunks or balls. This makes cleaning faster, easier.

It dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Saves time, saves labor—improves both your product and yield per batch.

Then Choose

THE
Cowles
DISSOLVER



The Cowles Company
INCORPORATED

FREE CATALOG

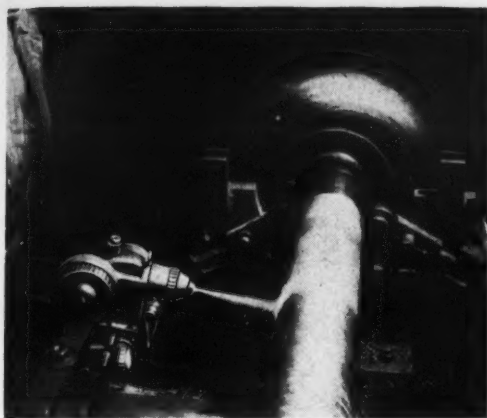
THE COWLES COMPANY, INC.
113 Trackside, Cayuga, N.Y.

Please send me your latest Cowles Dissolver Catalog

NAME _____
COMPANY _____
STREET _____
CITY & STATE _____

When inquiring check CP 6510
on handy form, pgs. 2-3

CHEMICAL PROCESSING



Photograph shows the metallizing spray gun applying Metcoloy No. 2 stainless to the compression piston

The Kanawha Tool & Die Co., Charleston, W. Va., remedied the situation by metallizing the rods, which are 5-1/4" alloy steel and wear 2-1/2" on either side of the centrally located 19" pistons.

The rods were turned down approximately 0.10" on the radius, threaded with a fine U-type thread, and finally prepared with Metco shaft tool. The area to be metallized was sprayed with Metcoloy No. 2 stainless to about 3/32" over the original diameter, and finally it was ground to required dimension.

Rods were ready for service in two days at a cost of about \$250 as contrasted to previous amount running into four figures. The chemical corporation has found that a rod with metallized surface is superior to the original rod. Its useful service life is greater and packing wears longer. They are convinced to the extent that they have new piston and rod units metallized before installation of the equipment.

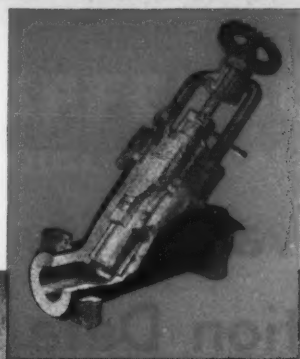
(Reported through cooperation of Metallizing Engineering Co., Inc., Dept. CP, 38-14 30th St., Long Island City 1, N. Y. . . . or for more information check CP 6511 on handy form, pages 2 and 3.)

Money-saving method recovers metals from processing solns

In many manufacturing processes, dilute solutions are produced containing metals whose recovery would be very profitable. Of several processes which have been considered and applied to the recovery of these materials, ion exchange offers many advantageous features.

Ten-page discussion outlines several of the methods which have been designed to recover many metals from solution, including zinc, tin, copper, chromium, gold, and silver. Tables, charts, and other data illustrate some of the forms in which industrially important metals are present in solutions and how these metals might be economically recovered.

"Metal Recovery by Ion Exchange" is issued by The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N.Y. When inquiring specify CP 6512 on handy form, pages 2 and 3.

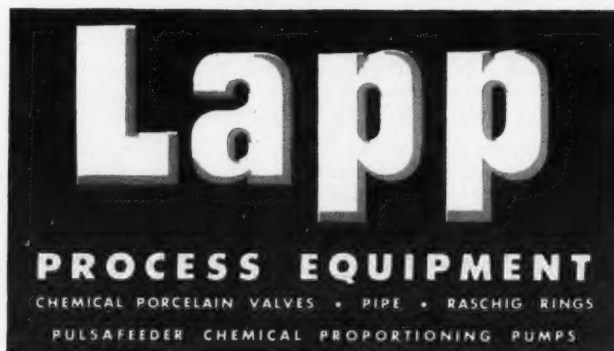


**PRIMARY PROTECTION FOR
PERSONNEL . . . EQUIPMENT . . .
PRODUCT . . .**



Lapp TUFCLAD

**SOLID Chemical Porcelain
ARMORED with Fiberglass-
Reinforced Plastic**



Y-Valves, as shown, and Angle Valves are available in Lapp TUFCLAD Chemical Porcelain in 1/2", 1", 1 1/2", 2", 3", 4" and 6" sizes. Also safety valves, flush valves, plug cocks, pipe and fittings (to 8" dia.) and special shapes.

What's your first worry in case of minor fire or explosion or accident? You can get a big one off your mind with installation of Lapp Chemical Porcelain with TUFCLAD Fiberglass-reinforced plastic. Without special construction for protection, you have all the advantages of a solid porcelain system with extra security for personnel, equipment and product.

TUFCLAD provides a cushion to protect porcelain against accidental damage in handling or operation—and as insulator against thermal shock. And the TUFCLAD shell is of itself tough—fully able to hold operating pressures against gross leakage even though porcelain is damaged by accident, explosion or fire.

WRITE for description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 530 Maple St., Le Roy, N. Y.

When inquiring check CP 6513 on handy form, pgs. 2-3

Announce Availability of Silicone Gum and Formulation Data to Fabricators

May now process silicone rubber in same manner as other synthetic and natural elastomers

IN the past silicone rubber compounds were available only from manufacturers of silicones, a fact which prevented silicone rubber from following production pattern established by other synthetic rubber developments. As a result of revision of marketing policy by a producer of silicone rubber gum, raw material and detailed suggestions for converting polymer to finished compounds are now available to rubber fabricators. Complete program is underway to acquaint fabricators with techniques and formulations necessary to produce molding and extruding compounds on their own equipment and handle silicone rubber in the same manner as other types of elastomers. According to manufacturer of the silicones, this will allow fabricators to offer faster service and greater flexibility of operation.

Sufficient detailed data has been collected to enable the manufacturer of silicone rubber gum to make specific suggestions regarding formulation of the silicone into compounds which have certain specific properties. Although composition of finished products may be varied in numerous ways to obtain a wide range of physical properties, silicone rubber compound recipes are quite simple as compared to those for organic rubber stocks. Many silicone compounds contain only three ingredients: gum, filler, and vulcanizing agent (catalyst). In addition, a second filler is sometimes included in the formulation; a small amount of mercurous oxide is also added to lower compression set at elevated temperatures. With exception of the foregoing, the only other ingredient normally used in the formulations is an inorganic pigment for tinting purposes.

Details of Formulation

Since most applications of finished products require that the rubber be exposed to high temperatures, fillers used in formulation should be unaffected by temperatures of 500-600°F. In addition, it is also desirable that fillers not contain free acid or alkali or any material which may develop free acid or alkali. Some materials which have been used as fillers in silicone rubber include a silica aerogel, flux-calcined diatomaceous silica, diatomaceous silica, precipitated calcium carbonate, iron oxide, lithopone, zinc oxide, titanium dioxide, and barytes. Evaluation of samples

containing these fillers has resulted in some observations which may serve as a guide to formulators.

According to manufacturer of the silicone gum, the two types of diatomaceous silica provide best processability of available fillers. In addition to the fact that uncured compounds remain soft and easily millable, extrudability is excellent. However, the silica aerogel seems to provide greatest reinforcement of these fillers and gives highest values of tensile strength, elongation, and tear strength. Since large surface area, due to extremely fine particle size, produces compounds with high water and oil absorption than most other fillers, silica aerogel is normally used in combination with either of the two types of diatomaceous silica.

Since curing or vulcanizing of silicone rubber proceeds through a reaction known as "free radical mechanism", curing may be aided by the application of heat and initiated by addition of small amount of catalyst such as an organic peroxide. Benzoyl peroxide has found considerable use in this respect. Although material may be used in any of several forms — including the dry powder or 50% paste of powder in silicone oil, the 50% paste yields quicker dispersion with a minimum of explosive hazards. Amount of catalyst necessary to start cure varies with gum employed and nature and quantity of filler used.

Red iron oxide, chromium oxide, Mapico Tan #20, titanium dioxide, Cadmolith yellow, carbon black, and black iron oxide have been employed as tinting pigments without adverse effect on heat aging of resulting compounds. Since the light-colored or colorless state of silicone gums lends itself to pigmentation, only small amounts of the order of 0.5 to 2.0 parts of tinting material are required per 100 parts of gum.

Although, according to manufacturer, silicone rubber compounds have inherently better compression set properties than other commercially available elastomeric materials, still lower values at elevated temperatures may be obtained by addition of mercurous oxide to compounds.

Optimum Properties

Although the ideal rubber compound, silicone or otherwise, would have, in a complete durometer

range, maximum tensile strength, elongation, and tear strength, in addition to minimum compression set, water, and oil absorption, silicone rubbers are no more able to meet this objective than any other elastomer. However, the materials may be formulated to meet optimum values through proper procedure in formulation, compounding, handling, and curing.

The following general observations may be made regarding development of optimum properties. A rather complete durometer range is available in silicone rubber; durometer is dependent upon three factors: filler, catalyst, and cure. Of these factors, filler and cure are most important. Since application of final product determines temperature of cure of formulation, durometer becomes mainly a function of filler loading, with hardness showing a rather straight-line ratio with filler content.

Maximum tensile strength may be obtained through use of reinforcing fillers. Elongation is also a function of filler and gum used, and it varies inversely with amounts of filler and catalyst in compound and with the cure. Compression set is mainly a function of cure, independent of additives. In general, the longer and higher temperature the cure, the lower the compression set. In addition gum, nature and amount of filler, and amount of catalyst also have some effect on compression set values.

Since oil and water resistance in silicone rubber are normally closely related, both are functions of the gum which is used, nature and amount of filler, and the cure. Although silicone rubber has inherently good electrical insulating properties, strict cleanliness should be observed, since presence of dirt or other contamination in a compound will result in failure to meet electrical specifications.

A fact of interest to the rubber fabricator will be that silicone rubber is compounded on equipment common to the rubber industry. Water-cooled mills used for handling organic rubbers are satisfactory for use with silicone rubber, but extreme care must be taken that all residues of organic rubber are removed. Experience has indicated that the ideal all-around mill for handling silicone rubber will have a roll speed ratio between 1.25:1 and 1.4:1.

More detailed information on processing of silicone rubber compounds and fabrication of silicone rubber parts as well as data on suggested formulations designed to meet specific conditions of application or standard specifications is available from the manufacturer of the silicone rubber gum.

(Silicone rubber gum is a product of Chemical Div., General Electric Co., Dept. CP, Pittsfield, Mass. . . . or for more information check CP 6514 on handy form, pages 2 and 3.)

Heat Transfer Medium, Hydraulic Fluid—Suggested Uses of Organic Silicates

OUT of the development stage is a series of organic silicate liquids. Two of these — Orsil AF-1 and BF-1 — have reached the stage of pilot plant production and are available in limited commercial quantities. Orsil liquids are characterized by a wide liquid range and high viscosity index, properties which make them of interest in a variety of specialized applications. Some physical properties are shown in the following table:

	ORSIL	
	AF-1	BF-1
Boiling point, °F (760 mm)	770-800	690-700
Pour Point, °F	-45	<-100
Viscosity,		
Centistokes @ 100°F	12.0	6.8
Centistokes @ 210°F	3.6	2.4
Viscosity index	189	175
Weight per gallon		
@ 60°F, lb	9.55	7.32
Flash point (COC), °F	435	395

Orsil AF-1 is a tetra-aryl silicate suggested for use as a liquid phase heat transfer medium, particularly in the range of 500-650°F. When employed in a closed system, excluding water and air, it is stable for extended periods of time at temperatures up to 650°F, and may be used intermittently up to 700°F. Use of a liquid phase heat transfer medium at these temperatures permits the design of a system for operation at atmospheric pressure with attendant advantages in simplicity. In addition, the low pour point insures that no difficulties are experienced during start-up, even at very low ambient temperatures. Use of a liquid rather than a vapor phase medium is particularly advantageous in those cases where an alternate heating and cooling cycle is desired.

Very low corrosion with most of the usual materials of construction is exhibited by Orsil AF-1. It is comparatively nontoxic and is easy to handle. Its high flash point decreases the hazard of operation

(Continued on page 22)

JEFFERSON CHEMICALS

"ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES"

Ethylene Oxide — For use as a starting material for the manufacture of acrylonitrile and nonionic surface active agents; a sterilizing agent and fumigant; and, in general, a very reactive chemical intermediate.

Ethylene Glycol — For use as a permanent-type antifreeze; a heat transfer medium; a raw material in the manufacture of low-freezing dynamite; a starting material for the production of synthetic fibers and alkyd resins; a plasticizer; a constituent of hydraulic fluids; and a general solvent and chemical intermediate.

Ethylene Dichloride — For use as an ingredient of tetraethyl lead fluid; a solvent for fats, oils, and waxes; a metal degreaser; a spotting agent for textile cleaning; a chemical intermediate for use in resin manufacture and in other processes.

Diethylene Glycol — For use as a dehydrating agent for natural gas; a moistening agent for tobacco, glue, and gelatin; a textile lubricant and coupling agent; a solvent in textile dyeing and printing; a constituent of hydraulic fluids; a chemical intermediate.

Monoethanolamine — For use as a gas scrubbing agent for recovery of hydrogen sulfide and carbon dioxide, and as a chemical intermediate in the manufacture of various surface active agents, rubber chemicals, and other materials, and as an agent in the manufacture of antibiotics.

Diethanolamine — For use as an intermediate in the manufacture of surface active agents used in textile specialties, herbicides, petroleum demulsifiers, etc.; as a gas scrubber in refinery operations; a rubber chemicals intermediate.

Triethanolamine — For use as an intermediate in manufacture of surface active agents used in textile specialties, waxes and polishes, herbicides, petroleum demulsifiers, toilet goods, cement additives, cutting oils, etc.; a rubber chemicals intermediate.

Nonyl Phenol* — For use as an anionic and nonionic surface active agent intermediate; a starting material for the manufacture of lubricating oil additives, stabilizers, petroleum demulsifiers, oil-soluble phenolic resins and plasticizers.

**A new Jefferson chemical now being brought into full production.*

Jefferson
CHEMICAL COMPANY, INC.

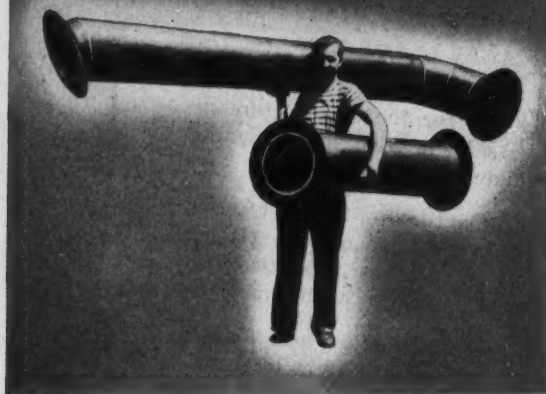
260 MADISON AVENUE, NEW YORK 16, N. Y.
Houston Sales Office: 318 Melrose Building, Houston 2, Texas
Warehouse Stores: Tenafly, New Jersey; Chicago, Illinois; Houston, Texas



Shipped in tank cars or drums. For technical data and information on availability and prices, please address Department B. Your request will be answered promptly.

When inquiring check CP 6515 on handy form, pgs. 2-3

HERE AT "Agile"
YOU WILL FIND



EXPERT ADVICE

on the use of our new outstanding construction materials for anti-corrosive applications.

AGILENE (Specially Selected Grades of Polyethylene for highest corrosion resistance.)

AGILIDE (A new, completely unplasticized Polyvinyl chloride, insuring high structural strength and excellent resistance to corrosion.)

AGILEST (A series of glass reinforced Polyesters for highest structural strength and high chemical resistance.)

EXPERT ENGINEERING

We have the required knowledge to design and fabricate according to your specifications:—

Containers and Tanks, both are self-supporting structures and liners for steel, concrete and wood tanks; pipe lines and pipe installations, apparatus and equipment, such as exhaust hoods and systems, reaction vessels, acid pumps, valves, etc.

We invite your inquiries and will be pleased to furnish you literature, prices, delivery, etc. for fabrications built to your own specifications, as well as on sheets, tubing, ducting, etc.



American Agile Corporation

Plant and General Offices • 3461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

When inquiring check CP 6516 on handy form, pgs. 2-3

Materials

Non-penetrating Quality Characterizes Four Alkyd Resins

Medium oil length products suggested
for flat wall finishes, primers, sealers
and undercoaters

ONE of the properties of sample paint formulas made with a recently announced group of phthalic alkyds is the characteristic degree of non-penetration. In flat white compositions, manufacturer reports "excellent" non-penetration for his Falkyd Solutions J-9 and B-365, "very good" for J-97, and "good" for Solution B-360. All members of this medium oil length group are recommended for flat wall finishes, primers, sealers and undercoaters which may be applied by brush, roller or spray. Properties and specifications of the individual products are presented in the following discussion:

Falkyd Solution J-9

—because of its particular polymer structure displays high non-penetrating and non-wetting properties. This coupled with fast dry and ease of application makes it extremely useful for "Flat Enamel" finishes. Paint films produced from J-9 develop a high degree of scrub resistance and washability.

Solution J-9 will produce paints of different viscosities, depending upon the method of incorporating thinner into the paint system. However, reproducible results are obtained once a standard plant method of handling is adopted.

It is generally compatible with ester gum cuts or short oil alkyd resins and has a limited compatibility with varnish oils. Suggested thinners for Solution J-9 are: mineral spirits, odorless solvents, kerosene and slowly evaporating petroleum thinners.

Specifications:

Non-volatile, %	39-41
Volatile	min. spts.
Viscosity	viscous*
Viscosity when reduced to 25% solids:	
With 40 KB min. spts.	6-1
With 32-35 KB min. spts.	X-Z
Color (Gardner 1933)	7-9
Acid number	14-20
Lb/gal, ± 0.1	7.4
Lieberman Storch test	positive
*off Gardner-Holdt scale	

Falkyd Solution J-9 is of plastic consistency and is offered in all quantities for drum or bulk shipments. Where a more fluid condition is desired, it can be shipped at 30% non-volatile.

Falkyd Solution J-97

—was specifically developed to have lower viscosity properties than J-9 to facilitate handling in plant manufacture.

It is compatible with most other alkyd resins, is a good pigment wetter and requires no special grinding technique. Falkyd J-97 contains no lime (as is true with J-9) and can be used with lime sensitive pigments.

Hard dry and ease of application characterize J-97 which has the following specifications:

Non-volatile, %	39-41
Volatile	min. spts.
Viscosity	Z1-Z3
Color (Gardner)	9 max
Acid number	15-20
Lb/gallon	7.3
Lieberman Storch test	positive
Solids @ C-G body, %	28
(When thinned in solvent as supplied)	

Suggested thinners are mineral spirits kerosene, and slowly evaporating petroleum fractions.

Falkyd Solution B-360

—is a pure medium oil length alkyd in normal petroleum thinner for first quality white and pastel flats. It is free of rosin, resins, lime, gellation agents and other modifiers. It will show moderate viscosity increase with age and consequent added non-penetration properties. The narrow viscosity range as shown in the specifications indicate normal storage stability.

Falkyd Solution B-360 is supplied for drum shipments at 50% non-volatile, which is a higher solids content than usual for non-penetrating resins. Transport or tank car shipments are available at 40% non-volatile. Specifications:

Non-volatile, %	49-51
Volatile	min. spts.
Viscosity (Gardner-Holdt)	Z5-Z7
Viscosity @ 40% non-vol.	U-X
Color (Gardner 1933)	7 max
Acid number	3-4
Lb/gallon	7.6
Solids @ C-G body, %	30

Solution B-360 easily produces so-called "One Coat Flats" due to its high order of non-penetration. It can, in addition, be formulated at sufficiently high vehicle solids to give non-porous, hard, washable films. It can be used in undercoaters as the sole vehicle or as a hardener for limed oils or oleoresinous varnishes. Color retentive properties are reported to be excellent—suggesting its use in whites or light tints.

Falkyd Solution B-365

—is a pure medium oil length alkyd of the non-yellowing type containing "odorless" mineral spirits as the sole solvent. Thus, it is indicated for odorless paints. It is free of rosin or rosin derivatives, lime, gellation agents and other modifiers. Solution B-365 shows very good storage stability, both alone and in paints, despite the presence of a low Kauri Butanol solvent. It is mildly reactive with fine particle size zinc oxide showing normal initial viscosity increase.

Film integrity properties of B-365 are reported by the manufacturer to be excellent. Hard, non-porous films are developed, permitting early washing. Resistance to scuffing and rub-up is very high. It is compatible with most other alkyds, oils, and resin solutions. Odorless solvents are suggested as thinners. Specifications:

Non-volatile, %	39-41
Volatile	odorless min. spts.
Viscosity (Gardner-Holdt)	Z2-Z4
Color (Gardner)	7 max
Acid number	2-4
Lb./gallon	7.3
Solids @ C-G body, %	25
(When thinned in solvent as supplied)	

Color retentive properties indicate the use of Falkyd Solution B-365 in first grade whites and pastel tints. Hard drying and non-penetration properties suggest its use in deep-tone colors.

(Developed by Falk Division, Cargill, Incorporated, Dept. CP, P.O. Box 1075, Pittsburgh 30, Pa. . . or for more information check CP 6517 on handy form, pages 2 and 3.)

Tell development, uses of fluorochemical rubber

When a practical process for preparing perfluoro acids was developed, it became apparent that these acids could be utilized to introduce stable fluoro-carbon groups into polymers of various types. Today, a series of polyacrylates containing fluorinated chains varying in chain length from 1 to 9 carbon atoms have been prepared.

Greatest emphasis has been placed on polymers of 1,1-dihydroperfluorobutyl acrylate. A starting material for this polymer is perfluorobutyric acid. Acid is converted to the methyl or ethyl ester. The ester is reduced catalytically to the 1,1-dihydroperfluoro alcohol. Alcohol is then esterified with acrylic acid or one of its derivatives. The resulting acrylate is polymerized either in bulk, solution or emulsion.

Homopolymers are best vulcanized with metal oxides, whereas certain polymers can be best vulcanized with sulfur and reinforced with carbon black.

No non-fluorinated solvents are known to dissolve the polymer, but ketones and other oxygenated

(Continued on next page)

Hooker Chemical Guide (ONE OF A SERIES)

USE this handy reference to save time
in selecting high-quality chemicals.

MONOCHLOROBENZENE

Synonym: Phenyl Chloride
Formula: C_6H_5Cl
Molecular Weight: 112.5
Appearance: Clear, colorless liquid



TYPICAL PROPERTIES

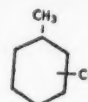
Freezing Point	—44° C
Distillation Range	131.2° to 132.2° C
Specific Gravity, 15.5°/15.5° C	1.114

USES

INSECTICIDAL INTERMEDIATE: DDT and other insecticides.
DYESTUFF INTERMEDIATE: Sulfur black and brown dyes.
CHEMICAL INTERMEDIATE: Organic synthesis.
SOLVENT: Paints, varnishes, lacquers, paint removers; general use.
HEAT TRANSFER FLUID: Suggested for condensing vapor systems, such as glass-enameled vessel jackets, which cannot stand high steam pressures.

MONOCHLOROTOLUENE

Synonym: Methylchlorobenzene
Formula: $CH_3C_6H_4Cl$
Molecular Weight: 126.5
Appearance: Clear, colorless to straw-colored liquid.



TYPICAL PROPERTIES

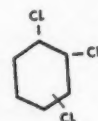
Freezing Point	below —45° C
Distillation Range	158.3° to 161.7° C
Specific Gravity, 15.5°/15.5° C	1.080

USES

SOLVENT: Rubber and synthetic resins.
INTERMEDIATE: Manufacture of rubber accelerators, chemicals.

TRICHLOROBENZENE, Tech.

Formula: $C_6H_3Cl_3$
Molecular Weight: 181.5
Appearance: Clear, almost colorless liquid



TYPICAL PROPERTIES

Freezing Point	10° C
Distillation Range	8° incl. 216° C
Specific Gravity, 15.5°/15.5° C	1.466

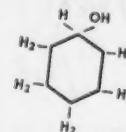
USES

INSECTICIDE: Soil poison for termites.
SOLVENT: Fats, oils, waxes, resins; crystallization solvent.
HEAT TRANSFER MEDIUM: Condensing vapor systems, 210° to 300° C.
DIELECTRIC FLUID: Transformers.
INTERMEDIATE: Dye intermediates, other organic chemicals.

HOOKER SOLVENTS

CYCLOHEXANOL

Synonym: Hexahydrophenol
Formula: $C_6H_{11}OH$
Molecular Weight: 100.1
Appearance: Viscous, colorless liquid with pleasant, aromatic odor.



TYPICAL PROPERTIES

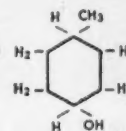
Freezing Range	High Grade 18° to 22° C	Tech. Grade —10° C to —20° C
Boiling Point	161.7° C	161.7° C
Specific Gravity, 25°/15.5° C	0.945	0.939
Flash Point	67° C	61° C

USES

SOLVENT: For resins, metallic soaps, dyes, fats and oils.
BLENDING AND STABILIZING AGENT: In textile soaps and dry cleaning agents.
HOMOGENIZING AGENT: For lacquers, varnishes and paints.
ALSO USED: In furniture and metal polishes, shoe creams, floor waxes, degreasing of leather, lubricating oils, also a plasticizer and ingredient of adhesives, and as a chemical intermediate in organic synthesis.

METHYL CYCLOHEXANOL

Synonym: Hexahydrocresol
Formula: $CH_3C_6H_{10}OH$
Molecular Weight: 114.1
Appearance: Light straw-colored, neutral, viscous liquid.



TYPICAL PROPERTIES

Distillation Range	155° to 160° C
Specific Gravity, 15.5°/15.5° C	0.924
Flash and Fire Points	71° C

USES

SOLVENT: For cellulose acetate, nitrocellulose and other cellulose esters for lacquers and coating compositions.
ANTI-OXIDANT: In lubricants.
BLENDING AGENT: For special textile soaps and detergents.

• For more information on items listed,
drop a note on your letterhead to:

HOOKER ELECTROCHEMICAL COMPANY
15 Forty-Seventh St., Niagara Falls, N. Y.

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS, N. Y. • NEW YORK, N. Y.
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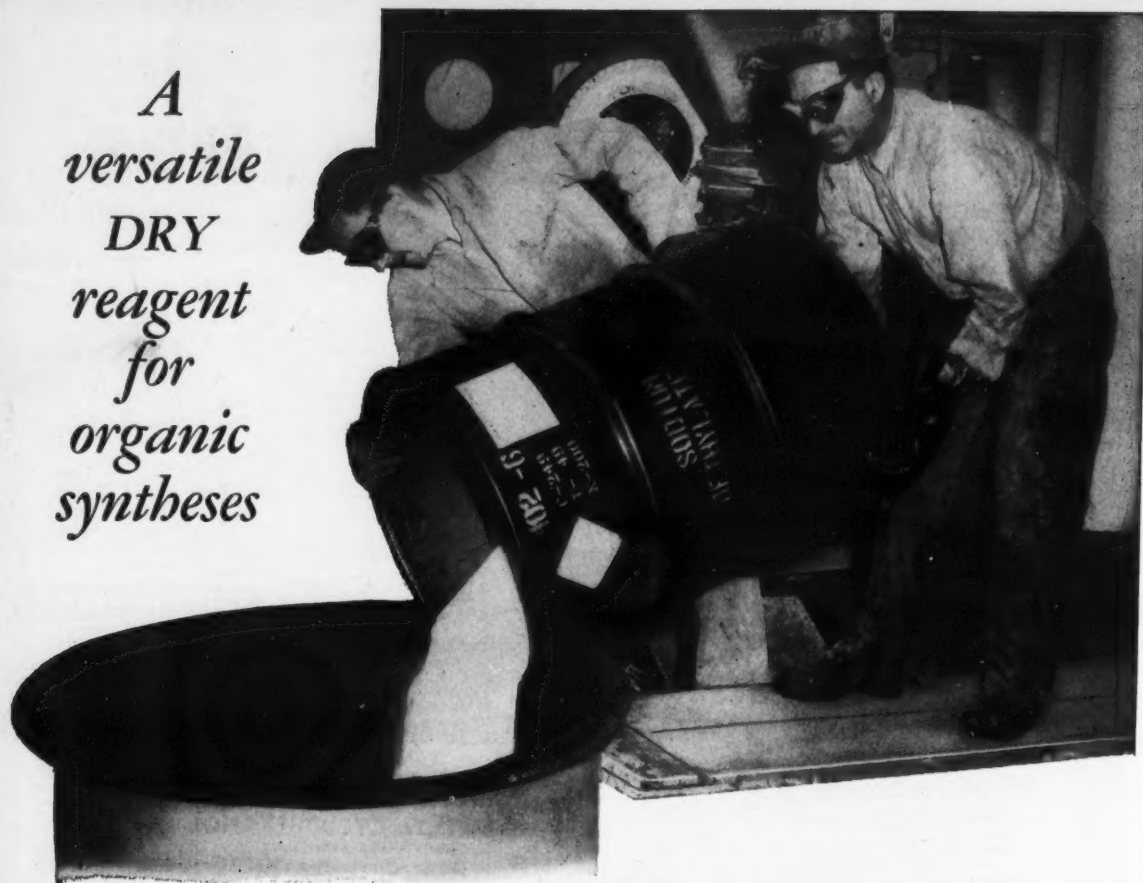
From the Salt of the Earth

When inquiring check CP 6518 on handy form, pgs. 2-3

**HOOKER
CHEMICALS**

2-1820

A
versatile
DRY
reagent
for
organic
syntheses



MATHIESON SODIUM METHYLATE

PROPERTIES OF MATHIESON SODIUM METHYLATE:

- Appearance:** A fine, white, very hygroscopic powder.
- Purity:** Contains a minimum of 95% sodium methylate (CH_3ONa), not over 2% of inorganic alkalis (sodium hydroxide and sodium carbonate), and not over 3% methanol.
- Stability:** Stable when stored in airtight containers.
- Melting Point:** None, decomposes and chars.
- Apparent Density:** About 0.4.
- Solubility:** Sodium methylate dissolves in approximately twice its weight of methanol.

Dry sodium methylate, first developed and produced by Mathieson, is now available in sufficient quantities to permit wider industrial usage and experimentation. Samples and expert technical assistance are available...Address Mathieson Chemical Corporation, Organic Chemicals Department, Baltimore 3, Maryland.

Mathieson
CHEMICALS

SERVING INDUSTRY. AGRICULTURE AND PUBLIC HEALTH

When inquiring check CP 6519 on handy form, pgs. 2-3

APPLICATIONS OF MATHIESON SODIUM METHYLATE:

- Fats and Oils:** Treatment of lard to produce a product of improved physical properties with greater consumer acceptance.
- Pharmaceutical:** Used in the manufacture of sulfadiazine and other sulfa drugs, phenobarbital and other barbiturates, vitamin B₁ and other vitamins, atabrine, barbituric acid.
- Paint and Varnish:** Used to improve the drying properties of vegetable oils.
- Miscellaneous:** Products involving the following chemical reactions: pyrogenic, metathetic, and oxidation-reduction reactions, condensations, and ring closures.

MATERIALS

Fluorochemical Rubber

(Continued from preceding page)

solvents tend to swell it. Special fluorinated solvents have been developed to handle the polymer. It shows outstanding resistance to ozone which ordinarily causes cracking and deterioration of conventional rubbers.

The new materials are extremely resistant to a wide variety of liquids such as fuels, lubricants, and hydraulic fluids. They also show good stability at high temperatures. Uses in gaskets, diaphragm valves, and other mechanical parts exposed to oils and solvents are predicted.

(Fluorochemical rubber is not yet ready for general distribution, nor is technical information available, says the Minnesota Mining & Manufacturing Company, 900 Fauquier Ave., Saint Paul 6, Minn.)

Remove oxides from metals without etching base . . .

one process works for copper and copper alloys, other for steel

Two processes are announced for the removal of oxides from metals: one is an alkaline procedure for oxide removal from copper and copper alloys, and the other is an electrolytic alkaline descaling process for steel.

The former procedure involves converting the cuprous oxide to cupric oxide by the use of process called Ebonol "C". This transforms cuprous oxide to cupric oxide which is easily removed by means of dilute acids. Completely eliminated are the use of strong oxidizing acids and the preferential attack on the base metal. Process has been found applicable to pure copper, tin-bronzes, phosphor bronzes, brasses, and various copper alloys containing silicon and aluminum.

Other process accomplishes rapid rust removal from steel and alloy steel parts by using periodic reverse current. Process is said to be ideal where no etching can be tolerated on the base metal. Compound that makes the process possible is called Compound 134. (Development of Enthone, Inc., Dept. CP, 442 Elm Street, New Haven, Conn. . . . or for more information check CP 6520 on handy form, pages 2 and 3.)

Lists nickel-containing alloys for permanent magnets

Sixteen-page bulletin reviews commercially available permanent magnet alloys, especially the Alnico family. In addition to discussing advantages and limitations of the alloys, bulletin describes characteristics of ductile permanent magnets and of special permanent magnets. Table gives representative magnetic properties and compositions of 23 alloys.

Bul EB-92/41 is issued by Dept. EZ, International Nickel Co., Inc., Dept. CP, New York 5, N. Y. When inquiring specify CP 6521 on handy form, pages 2 and 3.

Ultra thin gages of stainless steel available . . .

in strip to 8" wide and down to 0.0005" thin

Uses: Fabrication of chemical processing equipment, such as holding vessels, corrosion-resistant springs, stampings, valves, pumps, and gears; also high temperature equipment of all types.

Features: Strip is available in quantity from one to thousands of pounds.

Description: Stainless steels are produced by manufacturer in strip up to 8" wide and down to 0.0005" thin — to tolerances as close as ± 0.0001 ".

The stainless steel strip is processed on precision 2-High, 4-High, and Sendzimir rolling mills; on precision gang slitters; and through continuous atmosphere annealing lines.

(Available from American Silver Co., Industrial Division, Dept. CP, 36-07 Prince St., Flushing 54, N. Y. . . or for more information check CP 6522 on handy form, pages 2 and 3.)

Produces frosted or negative finish on plastics . . .

to replace sandblast methods

Uses: To effect a frosted or negative finish on Lucite, Plexiglas, and other plastics.

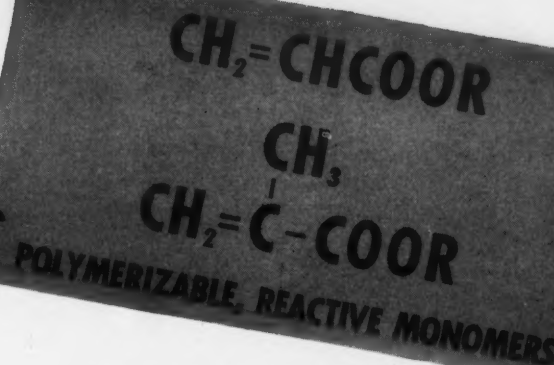
Features: Because this is a surface treatment, thin sheets can be used and substantial savings achieved. Degree of opacity can be easily controlled by the amount of lacquer applied.

Description: Acrylic Frosting Lacquer #158A may be applied by brush, dip or spray. It dries in 3-5 min at room temp and produces a smooth coating which is less inclined to hold dirt than a sand-blasted finish.

(Product of Chemical Development Corp., Dept. CP, Danvers, Mass. . . or for more information check CP 6523 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 6524 . . . see information request blank between pages 2-3.

Acrylic Monomers



Available grades

Tankcar Quantities

Methyl Acrylate
Ethyl Acrylate
Methyl Methacrylate

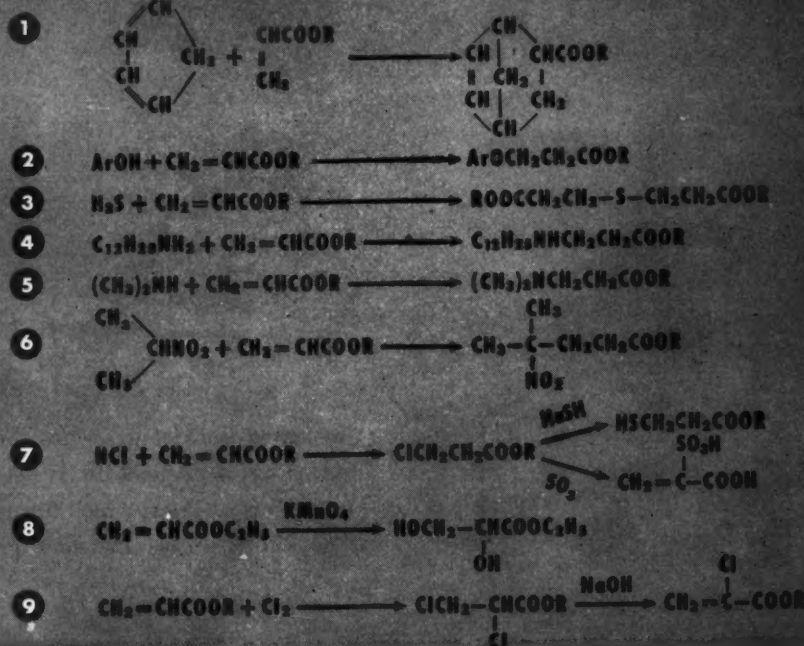
Drum Quantities

Ethyl Methacrylate
n-Butyl Methacrylate
n-Hexyl Methacrylate
n-Octyl Methacrylate
n-Lauryl Methacrylate
Methacrylic Acid—90%

Pilot Plant Quantities

n-Butyl Acrylate
Isobutyl Acrylate
2-Ethylhexyl Acrylate
n-Octyl Acrylate
Acrylic Acid
Calcium Acrylate
Methacrylic Acid—Glacial

Typical Reactions



Uses

Polymerization reactions with other monomers.
Chemical intermediate in organic synthesis.

CHEMICALS



FOR INDUSTRY

**ROHM & HAAS
COMPANY**

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Representations in principal foreign countries

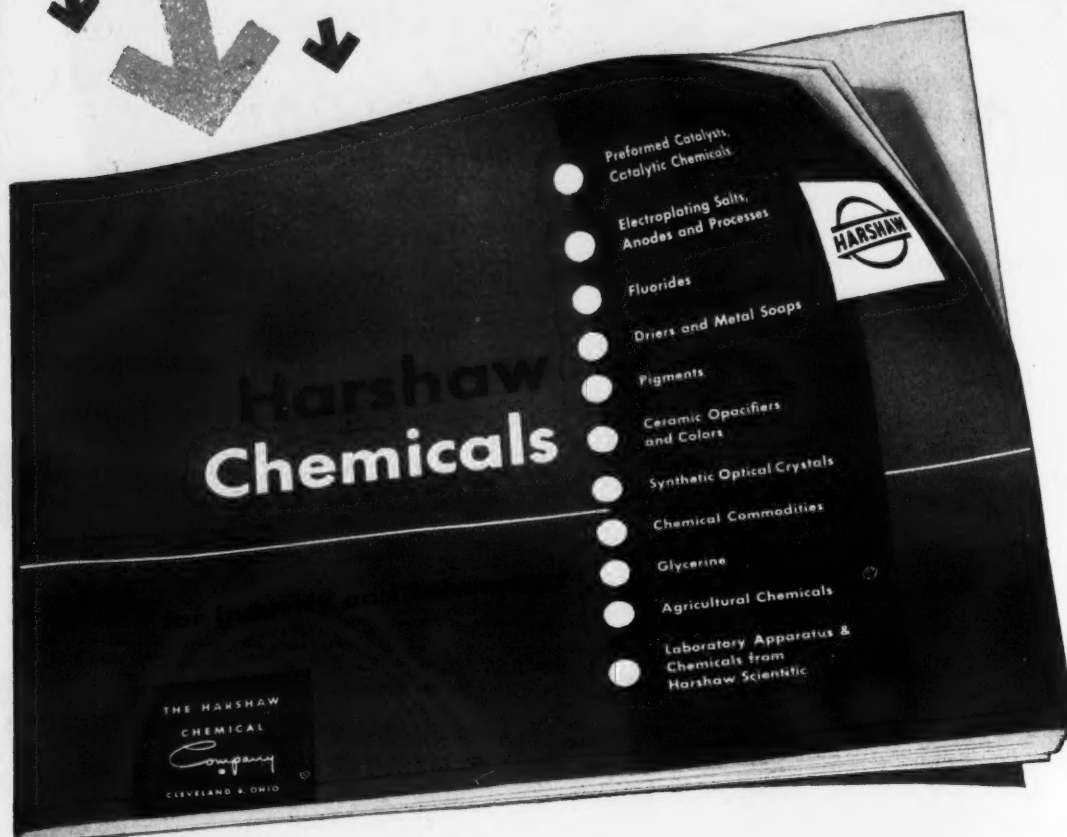
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16 PAGE BOOK...



This 16 page illustrated booklet describes the major activities of The Harshaw Chemical Co. It lists manufactured items and offers booklets which furnish more specific information about these Harshaw products.

THE HARSHAW CHEMICAL COMPANY

1945 East 97th Street, Cleveland 6, Ohio

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MY NAME (Please Print)

CO. NAME

STREET ADDRESS

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When inquiring check CP 6525 on handy form, pgs. 2-3

MATERIALS

Organic Silicate Liquids

(Continued from page 17)

at high temperatures. Thermal characteristics are favorable, and low viscosity simplifies the design of pumps and circulating systems.

Orsil BF-1, a tetra-alkyl silicate, is more stable and probably more versatile than its former counterpart. Because it cannot be used at elevated temperatures, it will find its major applications in fields other than heat transfer. When compounded with an inhibitor, it shows excellent stability to both hydrolysis and oxidation and therefore can be used in open systems up to about 450°F.

High viscosity, low pour point, and high boiling point suggest use in the formulation of lubricating oils or greases for extremely high or low temperature operation. Stability and lack of foaming action make it particularly advantageous in hydraulic dynamometers and similar hydro-kinetic energy converters. Fluid magnetic particle clutches and torque converters are other applications where Orsil BF-1 may be of interest.

Thermal characteristics of Orsil BF-1 are similar to those of Orsil AF-1, and it may be used as a liquid heat transfer medium at temperatures below 450°F. Being nontoxic and nonirritating, it should be of particular interest as a heat transfer medium in the food processing industry. Low vapor pressure and viscosity, and chemical inertness with most materials of construction, permit the design of simplified heat transfer systems as in the case of Orsil AF-1.

Extensive research work has been carried out on the use of Orsil BF-1 as an internal combustion engine coolant. In addition to the obvious advantages of an engine coolant which will neither freeze nor boil under the widest range of operating conditions, Orsil BF-1 offers marked reduction in corrosive attack on the engine cooling system components.

On theoretical grounds there is reason to believe that higher engine operating temperature should result in improved efficiency and fuel economy, but the problems associated with such applications remain largely to be worked out.

(Products of the Oronite Chemical Company, subsidiary of Standard Oil Company of California, Dept. CP, 38 Sansome Street, San Francisco 4, Calif. . . or for more information check CP 6526 on handy form, pages 2 and 3.)

Offers solution to problem of dehydrating gases

Techniques and principles of removal of water vapor from various gases are presented in colorful 12-page bulletin. Several models of dehydrating units are illustrated and described. Photographs show features and installations of equipment. Used in chemical and petroleum industries as well as critical metals processes.

Compressed air, natural gas, carbon dioxide, nitrogen, hydrogen, oxygen, atmosphere, and inert gases developed from liquid and gaseous fuels may be

dehydrated with equipment. Manufacturer of drying units reports that equipment assures improved product quality, constant process conditions and the elimination of contaminants, condensation, freeze-ups and corrosion by removing water vapor from air and other gases.

Bulletin includes handy check list of applications for equipment as well as discussion of operation of units, desiccants and their reactivation, design factors, and outlines and tables of specifications. Unique nomograph allows selection of proper equipment for known conditions by correlation of various physical factors.

Accessory unit for protection of desiccant in drying units against devitalization, by removing petroleum vapors, dirt, and liquids from gases to be dried, is described. Bul SC-1013 is issued by Selas Corporation of America, Dept. CP, Philadelphia 34, Pa. When inquiring specify CP 6527 on handy form, pages 2 and 3.

Increases adhesion of resin dispersions to synthetic fibers . . .

another product deposits films with good water resistance and clarity

Polyco 426 is a linear terpolymer in aqueous dispersion that is reported to improve the adhesion of other resin dispersions to synthetic fibers (rayon, nylon, etc) and glass. Permanent tackiness suggests its use as a pressure-sensitive adhesive. Mixtures with water-soluble resorcinol-formaldehyde resins are said to markedly increase the adhesion of synthetic latex films to synthetic fibers. Product is an anionic dispersion stable at alkaline pH, however, the emulsion is broken by addition of acids.

Polyco 497 is a colloidal water-dispersion of polyvinyl acetate copolymer which is capable of depositing films of exceptional clarity and water resistance. Applications are found for it in thickening and emulsifying, coating and sizing, adhesives, floor finishes, and textile warpsizing. Although films are water resistant, they readily dissolve in dilute alkalis or ammonia — advantageous in treating paper products and non-woven fabrics.

(Products of American Polymer Corp., Dept. CP, Peabody, Mass. . . . or for more information check CP 6528 on handy form, pages 2 and 3.)

Versatile wax gives emulsions which are pH-stable

An oil-in-water emulsifying wax which yields emulsions stable over a wide pH range is described in 20-page bulletin. Material may be used to prepare greaseless ointments, creams, and lotions, and is especially useful when incorporating acids, bases, alkalis, and salts in various bases.

"Ceramol" is issued by Aceto Chemical Co., Inc., Dept. CP, 82 Beaver St., New York 5, N.Y. When inquiring specify CP 6529 on handy form, pages 2 and 3.

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ISOBUTYL ALCOHOL

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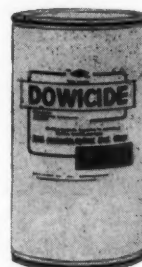
TENNESSEE EASTMAN COMPANY Division of Eastman Kodak Company **KINGSPORT, TENNESSEE**

When inquiring check CP 6530 on handy form, pgs. 2-3



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When inquiring check 6531 on handy form, pgs. 2-3

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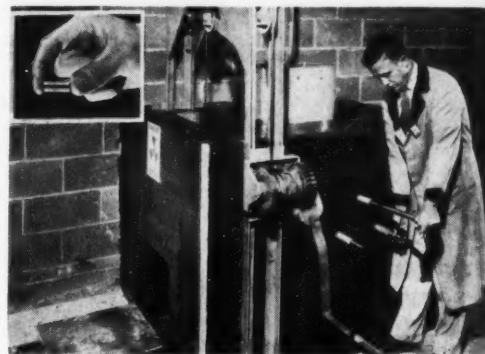
MATERIALS

**Cobalt-60 will serve as catalyst
in pilot plant project . . .**

may also prove useful in detecting metal flaws and in sterilizing medicines

Cobalt-60 will be used to replace chemical catalysts that may introduce unwanted impurities in plastics in a pilot plant research program recently undertaken. This powerful and useful radioactive material may also be of value in inspection of metals and other materials. Another promising use is in sterilization of drugs.

Massive 5-ton structure of lead and concrete has been built to safely house 100 curies of the high-energy source. This amount, equivalent in radioactivity to \$2 million worth of radium, weighs around 1½



Radiochemist adjusts control mechanism on 5-ton structure of lead and concrete which contains 100 curies of Cobalt-60 being used in industrial research program. Size of this amount of the radioactive material is indicated in insert

ounces and is about the size of outer half of the thumb. Radiations given off by Cobalt-60 are about equal in penetrating power to those of a two million electron-volt X-ray machine.

Availability of energy in Cobalt-60 makes it practical to conduct studies that were not possible with less powerful radioactive materials requiring lengthy periods of radiation. Industrial research with Cobalt-60 will lay the groundwork for future work when other atomic energy by-products will become available.

In detection of internal flaws in metals, Cobalt-60 can be used in place of more expensive X-ray machine. Material will allow cold sterilization of products that are harmed by heat sterilization. The high-energy source will be more effective and less cumbersome than ultraviolet radiation employed in some applications for inducing chemical reactions.

(Courtesy of Battelle Memorial Institute, Dept. CP, 505 King Ave., Columbus 1, Ohio.)

**Colorful flow diagram shows
extraction of cottonseed oil**

Operation, specifications, and features of series of "package plants" for direct solvent extraction of cottonseed oil are discussed in 8-page bulletin. Colorful, annotated flow diagram shows details of process in easy-to-understand manner.

Bul 623 is issued by Lukenweld, Div. of Lukens Steel Co., Dept. CP, Coatesville, Pa. When inquiring specify CP 6532 on handy form, pages 2 and 3.

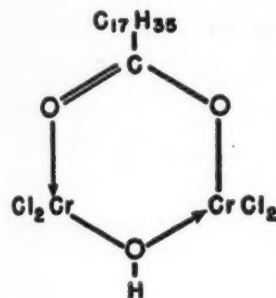
Chrome-stearic acid complex provides water resistance and good release . . .

Cr of complex affixes to surface being treated and stearate orients outward

Uses: On paper products where both water repellency and a high degree of size are desired. It can be used in release coatings in the paper field. Applications would include: 1) for repellency: paper bags, multi-wall sacks, butcher's wrap, container board, and sanitary food containers; 2) for release: gummed and pressure-sensitive tapes, rubber separator papers, bakery tray liners, meat board, meat wrappers, etc.

Product is an effective insolubilizer of "Elvacet" polyvinyl acetate emulsions of all grades. It works in this capacity in both plasticized and unplasticized formulations.

Features: Chromium of this Werner complex anchors tightly to surface being treated and its stearate group orients outward — providing resistance to water and other aqueous solutions, as well as giving good release characteristics.



Description:

"Quilon" is a concentrated solution of the complex, stearato chromic chloride, in isopropanol. Indicated formula is thought a true graphic representation of molecule, since percentage composition checks analysis and coordination numbers of oxygen and chromium are satisfied if each of chromium atoms is hydrated with two moles of water.

During drying of treated surfaces, "Quilon" condenses through dehydration and Cr-O-Cr linkages to give an insoluble coating which will firmly attach to negatively charged surfaces containing polar groups.

Reported properties follow:

Appearance	dark green liquid
Odor	alcoholic
Boiling pt, °F	180.3
Flash pt, °F (Tag open cup)	60
Sp gr, lb/gal @ 20°C	8.0
Typical analysis:	
stearato chromic chloride, %	29-30
isopropanol, %	65-70
water, %	5
Solubility	water, short chain aliphatic alcohols

(Manufactured by E. I. du Pont de Nemours & Co., Inc., Dept. CP, Grasselli Chemicals Dept., Wilmington 98, Del. . . or for more information check CP 6533 on handy form, pages 2 and 3.)

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a sure supply and

quick delivery.

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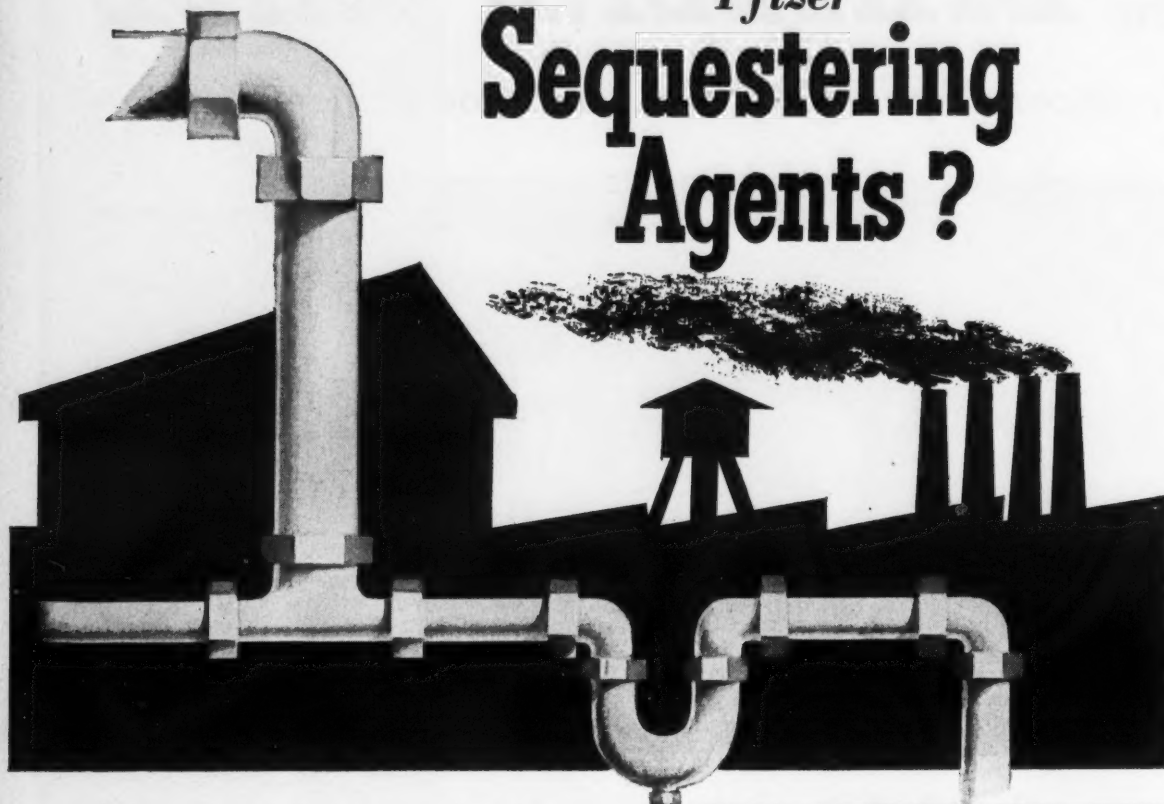
In Canada:

Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 6534 on handy form, pgs. 2-3

Do You Know
the "Ins and Outs" of these

Pfizer Sequestering Agents?



● Unwanted traces of iron, aluminum, copper and other metals picked up from pipe lines and processing equipment can be rendered inactive by the use of a Pfizer sequestering agent. You can put "in" Pfizer Citric or Gluconic Acid—or one of their derivatives*—to sequester "out" the metallic contaminants which interfere with efficient operation in your plant.

Pfizer Citrates and Gluconates are recommended as sequestering agents in...

The textile industry...to inactivate trace metals in dyeing, bleaching, kier boiling and mercerizing.

The leather industry...to adjust tanning solutions to the proper pH without precipitation.

Oil and fat industry...to inactivate trace metals which lead to rancidity.

Weed killer formulations...to prevent formation of insoluble, inactive salts in hard water areas.

Municipal and industrial water systems...to prevent the precipitation of metallic contaminants.

*Sodium Citrate, Sodium Gluconate, Ammonium Gluconate



PUT "IN"	SEQUESTER "OUT"	pH
CITRIC ACID Sequestering action of 100 parts of acid	Iron (Ferric)	19 Parts 7
	Aluminum	19 Parts 7
	Copper	26 Parts 7
	Zinc	44 Parts 7
	Cobalt	95 Parts 10
GLUCONIC ACID Sequestering action of 100 parts of acid	Iron (Ferric)	24 Parts 7
	Aluminum	4 Parts 7
	Copper	26 Parts 7
	Zinc	27 Parts 7
	Cobalt	6 Parts 10

Pfizer has a wealth of information on the effectiveness of these Citrate and Gluconate sequestering agents. For additional data, write:

CHAS. PFIZER & CO., INC.

630 Flushing Ave., Brooklyn 6, N. Y.

Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.



PFIZER

Manufacturing Chemists for Over 100 Years

When inquiring check CP 6535 on handy form, pgs. 2-3

MATERIALS

Ready-to-use polyvinyl resin glue stays stable after exposure to freezing temps . . .

full strength bonds are developed at any plant temp from 50 to 110°F

Uses: For gluing wood, Formica and similar laminates, paper, fabrics and other porous or semi-porous materials.

Features: Provides good filling action on rough surfaces, bonds well at low pressures and forms a flexible bond that does not crystallize or become brittle.

Description: Cascorez CV-750 is a ready-to-use, white, liquid polyvinyl resin emulsion which sets quickly at room temp. Set film is light and almost transparent. It remains usable at least 6 months at 70°F and is not harmed by freezing if thawed slowly to room temp and stirred before use.

Plant and glue temps are not critical. Full strength bonds are developed at any plant temperature from 50 to 110°F. High dry strength (up to 3800 psi on maple blocks) is obtained, and the bond is non-abrasive on cutting tools.

(Developed by The Borden Co., Chemical Division, Dept. CP, 350 Madison Ave., New York 17, N. Y. . . . or for more information check CP 6536 on handy form, pages 2 and 3.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Readers Service slip . . . will bring you what you want. This idea originated with **CHEMICAL PROCESSING** many years ago . . . to help busy men like you!

THE EDITORS

Plastic bearing material resists temperatures over 400°F

Plastic bearing material which resists temperatures in excess of 400°F is described in two-page bulletin. Product requires no lubrication — no sealed-in lubricant or lubricant impregnation is needed. Material contains no oil, graphite, or other substances usually referred to as lubricants. Compound also has high heat resistance and an inherently low coefficient of friction. Since material is chemically inert, it cannot be attacked by any process material. Bulletin has handy chart which summarizes physical properties of material.

Also available is bulletin describing chemical and physical properties of a polytetrafluoroethylene resin used to make moldings of various forms.

Bulletins are available from Dixon Saddle Co., Dept. CP, Bristol, R. I. When inquiring specify CP 6537 on handy form, pages 2 and 3.

Clay offered in contact-filtration range at low cost . . .

ground to fineness of about 90%; has pH of about 5.5

Uses: Bleaching, decolorizing, clarifying, and de-odorizing of petroleum and vegetable oil products, chemicals, liquids, as well as other distillates.

Features: Low cost, ready availability, as well as high yield results.

Description: Kon-Tak is a finely ground natural clay offered for use within the contact-filtration range. Screen analysis shows: 90% through 200 mesh, and 60% through 325 mesh. Other physical data are:

pH (25 gm/100 ml H ₂ O)	5.5
Moisture	9.0%
Color	cream

Typical performance in refinery bright oil discloses the following:

	LB/BBL	
	45	60
Tag Robinson No.	2-1/8	2-7/8
NPA No.	6+	5+
Acid No.	—	0

(Manufactured by Baroid Sales Division, National Lead Co., Dept. CP, P.O. Box 1675, Houston 1, Tex. . . or for more information check CP 6538 on handy form, pages 2 and 3.)

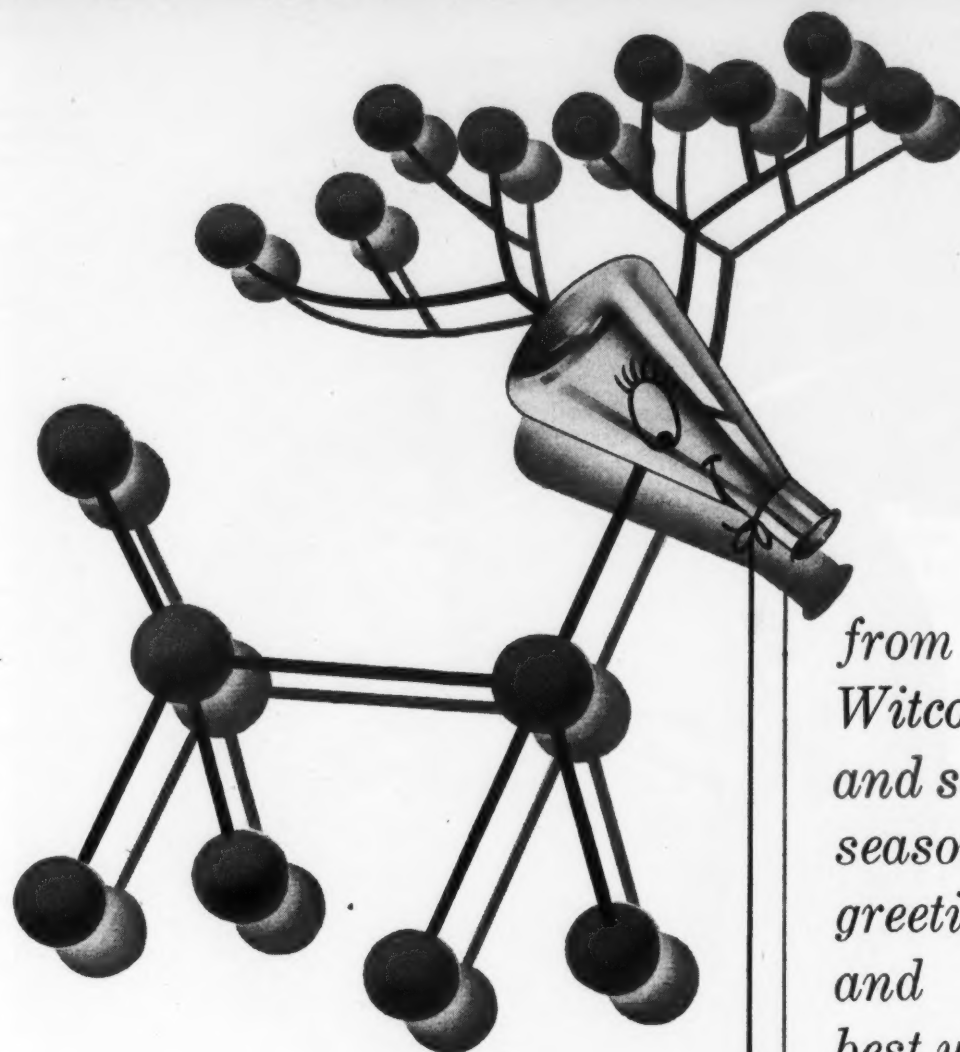
Shows applications of molding powder

Four-color, 12-page booklet deals with applications and properties of acrylic plastic molding powder. Illustrations show application and designs of products in many diverse fields of industrial manufacture.

Properties discussed include the material's clarity, dimensional stability, dielectric strength, chemical resistance, impact resistance, and machinability.

Bul PL-86a is issued by Plastics Dept. Rohm & Haas Co., Dept. CP, Washington Sq., Philadelphia 5, Pa. When inquiring specify CP 6539 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6540 . . . see information request blank between pages 2-3.



*from
Witco's plants
and sales offices,
season's
greetings
and
best wishes
for the
new year*



WITCO CHEMICAL COMPANY

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 CO_2 ...

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HARD-TO-GRIND
MATERIAL**

CO_2 — in liquid or solid form—plays a new role in still another vital operation: pulverizing certain food-stuffs, pharmaceuticals, resins, plastics and similar "soft" goods. By sub-cooling viscous materials to a brittle state, CO_2 makes them easier to grind and at the same time eliminates high temperatures that may injure heat-sensitive ingredients. CO_2 , an inert gas, also helps to prevent flash fires and oxidation. And CO_2 is non-corrosive...will not affect ordinary cast iron or steel grinding mills.

CO_2 — in solid, liquid or gaseous form — is finding wider and wider application with today's research technicians. A refrigerant...chemical...inert gas...pressure medium...and carbonation agent — it offers a

unique combination of properties. Often, two or more of these properties can be employed in a single operation! Low cost and ready availability make it a natural for hundreds of heretofore untried uses in a score of industries. If you'd like further information about CO_2 — or specific information about its applications in grinding operations — write today!



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at the frontiers of progress you'll find



When inquiring check CP 6541 on handy form, pgs. 2-3

MATERIALS

Introduce analytical reagent, and two organic raw mat'ls ...

of which one is starting point for synthesis of dyes, indicators and pharmaceuticals

Manufacturer announces the availability of the following chemicals:

2-Iodophene, $\text{C}_6\text{H}_4\text{I}_2$, which has a mol wt of 210.1 and bp of 73°C at 15 mm. A colorless oil, it resembles iodobenzene in many of its physical properties. Undergoes such typical organic halogen reactions as the Wurtz and Grignard. It is the starting point for the synthesis of many thiophene derivatives such as dyes, indicators and pharmaceuticals.

Luminol (5-amino-2,3-dihydro-1,4-phthalazinedione), $\text{C}_8\text{H}_7\text{O}_2\text{N}_3$, has a mol wt of 177 and mp of 328°C . It is in the form of white needles and is insoluble in water, soluble in acids with blue fluorescence, and in alkali without fluorescence. Enters into various substitution reactions due to polyfunctional character and responds to ultrasonic treatment. Some uses: as analytical reagent, indicator in plant and animal biochemistry and moisture indicator.

Thioformamide, HCSNH_2 , possesses a mol wt of 61.1 and mp of 29°C . Characterized by prismatic crystals which turn yellow and later decompose to a dark mass upon exposure. It is soluble in alcohol, ether, acetone, and ethyl acetate; sparingly soluble in benzene, chloroform, petroleum ether and CS_2 . Chemically, it is a strong reducing agent and gives addition products with many reagents. It is used in the preparation of thiazole (in vitamin B1 synthesis) and is the starting point for the synthesis of many pharmaceuticals.

(Announced by Bios Laboratories, Inc., Dept. CP, 17 West 60th St., New York 23, N. Y. ... or for more information check CP 6542 on handy form, pages 2 and 3.)

Tabulates specifications of 54 chemicals

Specifications, properties, and typical uses for 54 industrial chemicals are outlined and illustrated in 34-page catalog. Handy chart summarizes variety of suggested applications for various materials; emphasis is placed upon applications in six major fields of chemical industry.

Listing of various classes of chemicals discussed includes: aliphatic chemicals, including acids, anhydrides, alcohols, aldehydes, plasticizers, solvents; aromatic chemicals, comprising amines, aminophenols, phenols, phenol ethers, and miscellaneous materials; cellulose products, including cellulose acetate, cellulose acetate butyrate, and oxidized cellulose; and inorganic chemicals, comprising iron oxide and manganese sulfate.

"Eastman Industrial Chemicals," 6th ed, is issued by Tennessee Eastman Co., Dept. CP, Kingsport, Tenn. When inquiring specify CP 6543 on handy form, pages 2 and 3.

MATERIALS

Saran monofilaments available in finer denier . . .

copolymer increases fabric life; resists abrasion

Saran monofilaments in 70 and 100 denier, multifilaments and tow have been announced by The Saran Yarns Co. The material is also produced in three staple fiber forms — straight, crimped, and curled.

Saran multifilaments are available in 750 denier/50 filaments; 1200 denier/100 filaments; and 3000 denier/300 filaments. In tow form multifilaments are produced in 3000/300; 9000/900; and 100,000/10,000 denier. The range from 750 through 3000 denier finds service in chemical resistant filter cloths.

Saran (copolymer of vinylidene chloride and vinyl chloride) is mildew and rot-proof, moisture-proof, chemical and acid resistant, non-flammable, and abrasion resistant. It forms a tough and durable fiber which has an inherent ability to resist abrasion.

Because Saran is impervious to moisture and also resists most alkalis and acids, the surface of individual fibers are not attacked or penetrated. Material is not only non-flammable, but is self-extinguishing. Saran was developed by The Dow Chemical Company and has been in production since 1939.

(Saran yarns are products of The Saran Yarns Co., Dept. CP, Odenton, Md. . . . or for more information check CP 6544 on handy form, pages 2 and 3.)

Summarizes data for 22 products

Four convenient-to-use charts outline formulas, description, uses, and other information for 22 chemicals derived from tin, antimony, and zirconium.

Bul C-168 is issued by Metal & Thermit Corp., Chemical Div., Dept. CP, 100 E. 42nd St., New York 17, N. Y. When inquiring specify CP 6545 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6546 . . . see information request blank between pages 2-3.

HEADING IN NEW DIRECTIONS*

Pointing the way to the varied uses . . . new and old . . .

of its products is an integral part of Niagara's service to industry.

NIALK® Carbonate of Potash

This potash salt is now playing an important role in numerous pharmaceutical and vitamin applications, where its exceptional purity and quality make it particularly helpful in meeting the high manufacturing standards of the drug field:

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NIAGARA ALKALI COMPANY

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NIALK CARBONATE OF POTASH NIALK PARADICHLOROBENZENE

NIALK CAUSTIC SODA NIALK TRICHLOROETHYLENE

NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)



MATERIALS

Good white-colored CaCO₃ now easily dispersed in rubber compds

Rubber compounders should be interested to learn that a fine-particle, precipitated calcium carbonate product is available having a high degree of dispersibility and good white color. In some instances, a direct mix has shown dispersion as good as a masterbatch using ultra-fine carbonates. Thus, it may be possible to eliminate the masterbatching step where this technique has been necessary to get dispersion of other pigments. Good white color is in contrast to the creamy color of pigments coated with tall oil.

Calcene NC retains the good physical properties of its earlier counterpart, Calcene TM, particularly excellent hot tear resistance. Typical properties are outlined below:

Bulk density, lb/cu ft	18 ± 2
Specific gravity	2.7
Particle size (av), micron	0.1
Wet screen test, % max on 325 mesh	0.1
Color	white
CaCO ₃ , % min	98.5
Moisture, % max	0.6
Alkalinity as Na ₂ O, % max	0.15
Acid insoluble, % max	0.2
Magnesium & alkali salts, % max	1.0
Oil absorption, rub-in method	40-50

(Product of Columbia-Southern Chemical Corporation, subsidiary of Pittsburgh Plate Glass Company, Dept. CP, Fifth Ave., at Bellefield, Pittsburgh 13, Pa. . . or for more information check CP 6547 on handy form, pages 2 and 3.)

NBS manufactures casting resin at low cost from available raw materials . . .

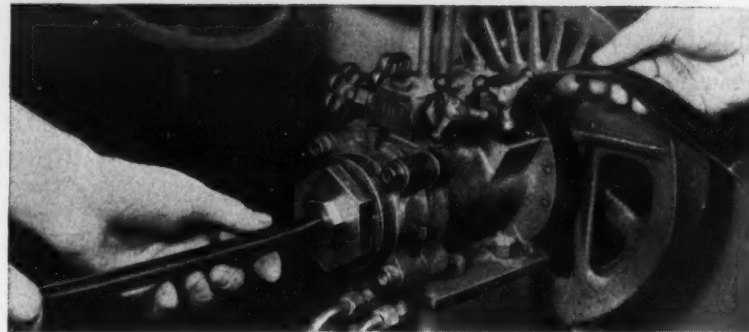
good storage properties even without refrigeration; unique ingredient is acrylonitrile monomer

A new casting resin for embedding or "potting" electronic components and assemblies has recently been developed by Max M. Lee and associates of the National Bureau of Standards' Ordnance Development Division. Easily manufactured at low cost from available raw materials, the new casting resin has good storage properties even without refrigeration. Its physical and electrical properties at both high and low frequencies are in general as good as those of expensive-to-make and hard-to-store casting resins. Designated NBS AN-5 Casting Resin, its unique ingredient is a small quantity of acrylonitrile monomer.

The resin was developed at NBS to meet the need for a material that could be economically manufactured from available ingredients. It is essentially a modified styrene. To the styrene are added distilled acrylonitrile and divinylbenzene (from which nearly all the inhibitor has been removed by passing it through a column of activated alumina), hydrogenated terphenyl, polystyrene, and cobalt drier.

Refrigeration is not necessary unless an unusually long storage life is required — storage in a cool,

TESTS CONFIRM ADVANTAGES OF ARNEEL® SD AS PLASTICIZER AND EXTRUSION AID



Recent tests conducted by one of the largest rubber companies have again confirmed the efficiency and economy of Arneel® SD as a plasticizer. The Arneels—a group of organic nitriles—have proved excellent softening agents for several synthetic rubbers and elastoplastics.

These recent tests highlight three important advantages of Arneel SD. These are: economy, efficiency, and compatibility. For instance, they report that 5 parts Arneel SD per 100 parts rubber is sufficient for excellent softening characteristics. This amount improves the knitting or fusing of the rubber into one continuous piece, and at the same time acts as an excellent extrusion aid. An auxiliary plasticizer can be added after the Arneel has been incorporated into the rubber.

Processing temperature on one specific stock could be lowered 20° by the addition of 5 parts Arneel SD in the compound. This chemical looks at least as good as any other low temperature plasticizer.

Arneel SD offers better compatibility with nitrile-type rubbers than any other plasticizer. Nitrile-type rubber, specified when good oil and solvent resistance are desired is used in gaskets, cables, cable casings, etc. Blends of nitrile-type rubber and vinyl plastics are often used today, for example, in coaxial cables made under government contracts. Due to its efficiency and proven compatibilities, Arneel SD should work well in this application.

As an extrusion agent alone, 4 oz. Arneel SD per 100 pounds of rubber stock is sufficient. However, this amount acts as an extrusion agent only, not as a plasticizer.

Write today for further information on this application of Arneel SD. At the same time, check the coupon for a free sample.



ALIPHATIC KETONES

We have recently made available three new ketones: Laurone, Palmitone, Stearone. Fatty ketones are generally considered as chemically unreactive compounds. The higher molecular weight ketones, such as these three, are particularly inert and are subject to only a few reactions under rigorous conditions.

The fact that these ketones are unaffected by high temperatures, acids, alkalis and other strong chemicals, suggests special value in many applications where their wax-like physical properties are desired.

COMPATIBILITY AND SOLUBILITY

These three ketones have a wide range of compatibility with many waxes, such as high-melting vegetable waxes, microcrystalline waxes and paraffin waxes. They are also compatible with triglycerides and fatty acids such as stearic acid. In 20-30% concentration, they form a solid paste at room temperature with many solvents. They are insoluble in water and only slightly soluble in organic solvents at room temperature.

TOXICITY

Stearone is considered as a non-toxic material. In laboratory tests experimental animals have been fed Stearone in amounts as high as 10% of the diet with no harmful effects. No dermal toxicity has been found in tests on experimental animals.

Toxicity data is not presently available on Laurone and Palmitone. However, it is felt that they, too, will have a low order of toxicity when testing is completed.

SUGGESTED FIELDS OF APPLICATION

The inert chemical nature of the fatty ketones and their resistance to degradation by high temperatures suggest a number of applications where these high-melting, wax-like materials may prove advantageous. Some of these indicated uses are: Wax and polish ingredient. Mold release agent. Resin lubricant and anti-blocking agent. Flattening agent for paints and varnishes. Ingredient in waterproofing formulations. Component of electrical insulation. Ingredient of protective coatings. Ingredient of cosmetic formulations. Vinyl calendering, extruding lubricant. Anti-block agent for coatings and films. Samples of all three of these interesting chemicals are available for your testing. Stearone is commercially available in 90 pound multiwall bags, while Palmitone and Laurone are available in quantities ranging from one to one hundred lbs.



THE ARNEELS

A series of high molecular weight aliphatic nitriles, the Arneels offer interesting raw materials for chemical synthesis. They have proved excellent softening agents for several synthetic rubbers and synthetic elastoplastics. They also serve as softening agents in many processes. A new booklet covers this series of Armour chemicals. Send the coupon for your copy.

THE DUOMEENS

Complete technical data on a new group of Armour Chemical Division products, the Duomeens, is offered in an illustrated booklet. The Duomeens have exhibited properties valuable in many fields, particularly as asphalt additives, as germicides, and as anti-corrosion agents. Send the coupon for your free copy of this booklet.



ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1835 WEST 31ST STREET • CHICAGO 9, ILLINOIS

ARMOUR'S FRACTIONATED COCONUT OIL FATTY ACIDS NOW EVEN HIGHER IN PURITY

Armour's Neo-Fat coco acids are now available in concentrations of above 92%. This is a degree of purity never before available, and, to mark the change, Armour has re-labeled the Neo-Fats. In the specification chart below, the old number, in parenthesis, follows the new. At the same time that purity standards have been raised, the iodine value has been lowered and the color has been lightened.

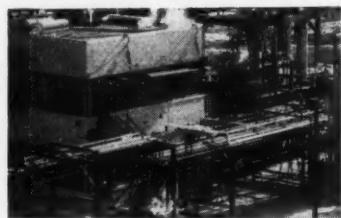
Ordinary distilled coconut oil fatty acids are mixtures of nine different fatty acids in percentages varying from 0.5% to 48%. Each of the nine component acids

has its own specific chemical and physical properties which make it valuable for certain uses but unsatisfactory for others. Today, however, you are no longer forced to buy a mixture of nine different fatty acids to get the one you really want.

A new specification chart has just been prepared which includes all pertinent information on these versatile chemicals. Check the coupon for your free copy of this chart. In addition, get the Neo-Fat booklet for end-use information. This new booklet contains much valuable data on the Neo-Fat fatty acids and their use.

	Iodine		Acid Value		Titer, C.		Color, Loribond 5/4"	Caproic	Caprylic	Capric	Lauric	Myristic	Palmitic
	Min.	Max.	Min.	Max.	Min.	Max.							
Neo-Fat 8 (7) (caprylic acid)	—	1.0	387	392	—	16°	2 R-20 Y	3	93	4			
Neo-Fat 10 (9) (capric acid)	—	1.0	323	329	28°	33°	2 R-20 Y		3	92	5		
Neo-Fat 12 (11) (lauric acid)	—	1.0	278	282	41°	44°	1.0 R-10 Y			1	95	4	
Neo-Fat 14 (13) (myristic acid)	—	1.0	243	249	48°	52°	1.0 R-10 Y				3	94	3

NEW SOLVENT CRYSTALLIZED OLEIC ACIDS



Armour's new low-temperature solvent crystallization process—utilizing a solvent which does not react with the raw materials—assures you of ester-free oleic acids which are resistant to oxidation and rancidity. Even during long periods of high-temperature processing, these highly stable acids will not break down or become ran-

cid. This new process assures you of other advantages not found in ordinary distilled or pressed oleic acids. The extremely low temperatures employed guarantee a substantially lower saturated fatty acid content than conventional types of oleic acids. And these products have excellent color, low unsaponifiable content and high acid value as other important advantages.

Here are the six oleic acids: Low Titer Red Oil, 8-11° Red Oil, Saponified Red Oil, Low Titer White Oleic, 8-11° White Oleic, Commercially Pure Oleic.

All 6 of these acids are available in 55 gal. drums and 4,000 and 8,000 gallon aluminum tank cars. Send the coupon for specifications and price quotations.

NON-YELLOWING VINYL CHLORIDE POLYMER STABILIZERS WITH ARMOUR'S NEO-FAT 12



There is an ever-increasing demand for vinyl chloride polymer type products which have improved resistance to the yellowing caused by the action of heat and/or light.

It has been the practice in the past to use stearic acid or low purity mixed coco fatty acids containing varying amounts of stearic, oleic and linoleic fatty acids. Soaps of these acids are not completely compatible and result in "blooming" or cloudy films. The presence of unsaturated acids contributes to undesirable yellowing and in pigmented films produces off-shade colors.

Neo-Fat 12 (lauric) soaps have shown outstanding merit in this application. They are compatible and do not contribute to cloudiness, bloom or yellowing in the vinyl films. The reasons for this are high lauric fatty acid content (95% min.) and the absence of stearic, palmitic and unsaturated acids. In addition, the high acid value, low moisture, and low unsaponifiable content insure a maximum of metal per pound of stabilizer. Stabilizers based on Neo-Fat 12 are extremely resistant to water leaching when used in vinyl films. Send the coupon for a sample of Neo-Fat 12 with which to begin your testing and evaluation of this outstanding new material.

MATERIALS

dark place (about 60° F) gives a shelf-life of about 8 to 18 months. Just before use, cumene hydroperoxide is added to catalyze the curing process which takes about 1 day at 50°C.

The acrylonitrile monomer is very reactive and helps speed up the polymerization of the casting resin. Divinylbenzene, a cross-linking agent, imparts certain thermosetting properties to the cured resin, reducing the tendency to flow at high temperatures. Hydrogenated terphenyl is added to improve the impact resistance, and polystyrene to improve the body, pouring consistency, and final mechanical properties—both of these inert ingredients also reduce shrinkage and absorb heat of polymerization.

Cobalt drier is added in small amount to counteract the inhibiting effect of air on the surface of the casting resin during curing and results in a hard non-tacky surface. Entire composition can be varied considerably when it is desired to maximize specific characteristics.

Although satisfactory cures can be obtained at room temperatures within several days, the curing rate is hastened by the application of a moderate amount of heat. At 50°C the resin gels in about 2 hours and is almost completely cured in about 20 hours. Choice of curing technique depends on the type of component being embedded and on the amount of resin required.

Physical and electrical properties of AN-5 Casting Resin are approximately the same as those of other low-loss casting resins, and in general compare favorably with some grades of polystyrene. Shrinkage during cure, though about the same (9.8%) as that of many polyester and modified styrene casting resins, is still excessive for many applications. Vulnerable components like glass vacuum tubes can be protected from the crushing action of the shrinking resin by coating them with foamed silicone rubber. Composition of AN-5 Casting Resin follows:

	% by weight
Styrene	50
Acrylonitrile	5
Divinylbenzene, 40-50% solution	2
Hydrogenated terphenyl	13
Polystyrene	30
Cobalt naphenate drier, 6% metal	2 drops/100 gm
Catalyst added to above just prior to curing:	
Cumene hydroperoxide	0.1—0.8 gm/100 gm

(From National Bureau of Standards, U.S. Department of Commerce, Washington 25, D.C.)

Polymerization process yields oils with no odor, taste

Polymerization operation, which results in oils suitable for use in edible products, is described in six-page bulletin. Flow-sheet and photographs show autoclaves which are used to produce edible oils with no objectionable odor or taste from heretofore undesirable fish oils.

Bul 201e is issued by General Industrial Development Corp., Dept. CP, 270 Park Ave., New York 17, N. Y. When inquiring specify CP 6549 on handy form, pages 2 and 3.

Send Samples: ☐ Arneel SD ☐ Laurone ☐ Palmitone ☐ Stearone ☐ Neo-Fat 12
Send Literature: ☐ Arneel SD booklet ☐ Oleic Acids specs. and prices ☐ Neo-Fat spec. chart
☐ Duomeen booklet ☐ "Fractionated Coco Oil Fatty Acids"

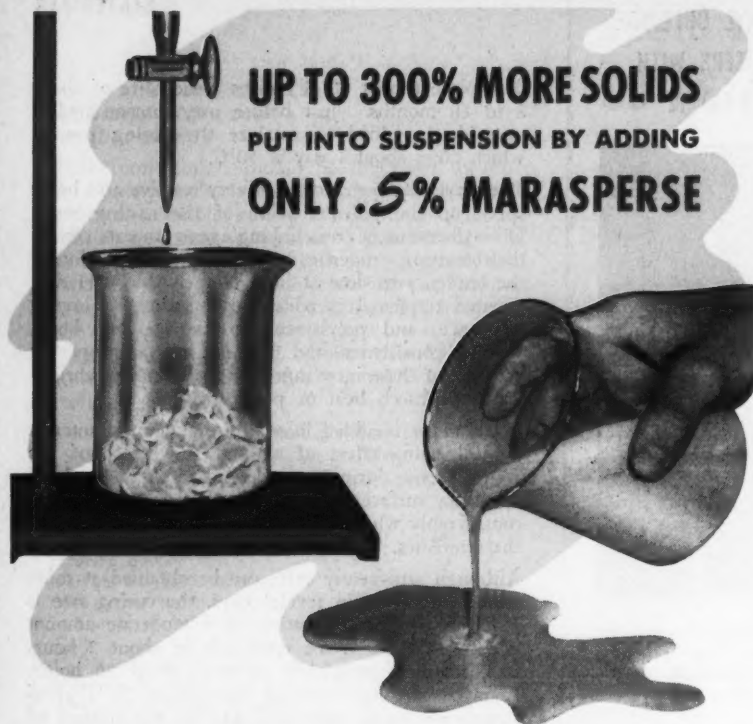
Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 6548 on handy form, pgs. 2-3



**UP TO 300% MORE SOLIDS
PUT INTO SUSPENSION BY ADDING
ONLY .5% MARASPERSE**

MARASPERSE

THE low cost, MORE EFFECTIVE DISPERSANT

With the addition of as little as only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE SOLIDS MAY BE DISPERSED and maintained in fluid suspension.

MARASPERSE dispersants are MORE EFFECTIVE and considerably MORE ECONOMICAL to use. They are completely soluble in water; are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for information on MARASPERSE products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.



MARATHON CORPORATION
CHEMICAL DIVISION
ROTHSCHILD • WISCONSIN

When inquiring check CP 6550 on handy form, pgs. 2-3

MATERIALS

**Impart no odor to paints
before, during or
after drying . . .**

series of three driers are manufactured with odorless-type solvents

Uses: Driers for odorless paint systems.

Features: Impart no odor to paints before, during or after drying. Equal in drying performance to other standard driers. Easy to handle because of low viscosity.

Completely soluble, stable and intermixable as concentrates or dilutions by themselves or in vehicles and pigmented compositions. Minimum staining properties.

Description: Metal content of the following series of driers is guaranteed within plus or minus 0.1%: Odorex Lead 24%, Odorex Cobalt 6%, and Odorex Manganese 6%. These catalysts are derived from specially treated fatty acids and are made with odorless-type solvents. Other metals will be added to the line in the future.

In the following listing of specifications, "A" refers to the lead compound, "B" to the cobalt, and "C" to the manganese product.

	"A"	"B"	"C"
Metal content, %	24.0 ± 0.1	6.0 ± 0.1	6.0 ± 0.1
Color max	Gardner #12	Blue-violet	Gardner #18
Clarity	Brilliant	Brilliant	Brilliant
Sp gr @ 80°F	1.100-1.130	0.915-0.945	0.915-0.945
Lb/gal @ 80°F	9.16-9.41	7.62-7.87	7.62-7.87
Solids max, %	67	73	78
Viscosity max @ 80°F	D	J	I
@ 20°F	K	Y	Y
Moisture max, %	0.3*	0.3**	0.3**
Flash point min, °F	104	104	104

*Dean Stark Method **Karl Fischer Method

(Developed by Nuodex Products Co., Inc., Dept. CP, Elizabeth F, N. J. . . or for more information check CP 6551 on handy form, pages 2 and 3.)

Manual describes 25 tests for water analysis

Included in 54-page manual are twenty-five of the tests which are most used in industrial water analysis. Subjects which are covered in detail in this manual include boiler water sampling, expression of results, test equipment, and general water analysis.

A partial list of the tests included in manual consists of: hardness, calcium and magnesium, alkalinity, hydrate alkalinity, chloride, pH, orthophosphate, sulfite, free carbon dioxide, dissolved oxygen, sulfate, soluble silica, chlorine, and acidity. In the presentation of tests, each test is covered in a separate chapter, and for some tests more than one method is included.

To obtain "Industrial Water Analysis" remit \$1.00 direct to E. F. Drew & Co., Inc., Dept. CP, 15 E. 26th St., New York 10, N. Y.



**DOW CORNING
ANTIFOAM A
proves its usefulness**

⚡ In laboratories or in commercial production and packaging, Dow Corning Antifoam A saves time; saves productive capacity now wasted on foam; eliminates overflowing and fire hazards; improves the finished product.

⚡ Foaming antifreeze agents, for example, may overflow and cause serious damage to automobiles driven with partially filled radiators. Even though such damage is usually traceable to air leaks in the cooling system, leading producers protect themselves and their customers by adding a trace of Antifoam A.

⚡ Heat-stable and practically inert physiologically, Antifoam A is generally effective at concentrations ranging from 1 to 200 ppm. It can be used as received or dispersed in a solvent. Where solvents are taboo, try one of our water dispersible emulsions of Antifoam A.

See for Yourself

Send for Free Sample

DOW CORNING SILICONES

DOW CORNING CORPORATION
Midland, Mich. Dept. No. 88-24

Please send sample of ☐ Antifoam A
☐ Emulsion of Antifoam A

Name _____
Address _____
City _____ State _____

DOW CORNING CORPORATION
Midland • Michigan

When inquiring check CP 6552 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Meet specifications for phosphatizing metals

A complete line of 5 materials (Turcoating) have been announced to fill phosphatizing requirements and meet government specifications: JAN-C-490, Grade I and II, types 4 and 5; USA-57-0-2C, Type II, Classes A, B, and C; PAPD-191, Grade I; MIL-S-5002; Navy Aeronautic M-364.

Turcoat 3540 provides a thin, smooth, tight phosphate coating on iron, steel or zinc as a bond for paint or metal drawing. It is applied by spray or dip.

Turcoat 3520 provides a phosphate coating on iron or steel as a foundation for oil, paint, or other organic finishes. Applied by dip.

Turcoat 3420 cleans and passivates iron and steel in one operation, improving paint adhesion. Applied by spray or dip.

Turcoat 3557 provides phosphate anti-friction coating for iron or steel moving parts. Dip applied. Turcoat 3560 provides chemical coating on terneplate and other difficult-to-coat non-ferrous metals as a bond for paint. Applied by spray or dip.

(Products of Turco Products, Inc., Dept. CP, 832 East 62nd St., Los Angeles 1, Calif. . . . or for more information check CP 6553 on handy form, pages 2 and 3.)

Info on bleaching acetate or nylon

General information on bleaching nylon and acetate with peracetic acid is contained in 22-page bulletin. Outlining seven detailed process descriptions, booklet gives data on bleach formula, bath make-up, equipment, and procedure.

According to manufacturer of peracetic acid, agent avoids chemical modification (saponification) of acetate rayon, and produces a better white on heat-set nylon.

Bul 44 is issued by Buffalo Electro-Chemical Co., Inc., Dept. CP, Station B, Buffalo 7, N.Y. When inquiring specify CP 6554 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6555 . . . see information request blank between pages 2-3.

**Here's a LOW COST answer
to many BASIC RAW MATERIALS problems...**

Piccopale

A
100%
Polymerized
Petroleum Resin



COMPLETELY NEW!



ENTIRELY DIFFERENT!



READILY AVAILABLE AT

LOW COST!



BY THE TRAINLOAD
IF YOU WANT IT!

PICCOPALE is a completely new synthetic resin, offering many money-saving and product-improving advantages. It is chemically inert—not affected by acids and alkalis; it is moisture-proof; its initial color is good and stability is fair; it is compatible with a very wide range of products, including waxes, rubbers, polyethylene, coumarone-indene resins,

phenolics, rosins and esterified rosins, many alkyds and vinyls, and most drying oils. PICCOPALE is soluble in naphthas, chlorinated solvents and long-chain oxygenated solvents.

PICCOPALE is available in enormous quantities—by the trainload if you want it—and priced so low that it can be used as a basic raw material.

Distributed by Pennsylvania Folk Chemical Co., Pittsburgh 30, Pa.
and Harwick Standard Chemical Co., Akron 5, Ohio



**PENNSYLVANIA
INDUSTRIAL CHEMICAL CORP.**

Clairton, Pennsylvania

Plants at Clairton, Pa.; West Elizabeth, Pa.;
and Chester, Pa.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
CLAIRTON, PENNSYLVANIA

Please send sample of PICCOPALE for (application)

(check) solid ☐ flaked ☐ liquid solution ☐

Name _____

Company _____

Address _____

MATERIALS

High phenol coefficient and fast wetting characterize two quaternaries . . .

average phenol coefficients for example, with *Staphylococcus Aureus* 209 approximate 300

Two quaternaries, closely related to manufacturer's Onyx BTC, have been introduced. BTC 471 is an alkyl dimethyl ethylbenzyl ammonium chloride which is supplied in a 50% aqueous solution. It may also be had in an 82.5% alcoholic solution.

BTC 927 is an alkyl dimethylbenzyl ammonium chloride — also supplied in a 50% aqueous solution. Following table shows the comparative phenol coefficients of the two compounds:

AVERAGE PHENOL COEFFICIENTS, 20°C

	<i>Staphylococcus Aureus</i> 209	<i>Salmonella Typhosa</i> Hopkins
BTC 471, 50%	300	275
BTC 471, 10%	60	55
BTC 927, 50%	300	225
BTC 927, 10%	60	45

Wetting action is compared in the following table according to the Draves Test.

	BTC 471		BTC 927	
Concentration, %	25°C	60°C	25°C	60°C
2.0	*	*	*	*
1.0	3.5	8.5	5.5	11.0
0.5	17.0	21.0	16.0	30.0
0.25	53.0	35.0	60.0	50.0

(Announced by Onyx Oil & Chemical Co., Industrial Division, Dept. CP, 181 Warren St., Jersey City 2, N. J. . . or for more information check CP 6556 on handy form, pages 2 and 3.)

Better wear resistance provided by coating wooden fan blades with liquid plastic . . .

acetate-butyrate base finish is easily applied by dipping procedure

Liquid plastic which dries to a smooth satin finish resistant to moisture, abrasion, fire, and corrosion is being used to coat wooden blades of industrial cooling-tower fans. Finish has an acetate-butyrate base with certain added chemicals which gave it resistance to combustion. These also add to toughness of coating and enhance quick drying and ease of application. Method of application is simple since a dipping procedure is used.

Blades are dipped in the liquid plastic, known as Aeroloid, and heated to slightly over 100°F. Consistency of plastic at this temperature makes it adhere in a smooth, thick coating. Excess runs off so readily that final blade finish appears almost like baked enamel, without ridges or runs.

Under proper time control, liquid plastic congeals so quickly that its drippings from end of fan blade turn rubbery within seconds after contact with air. Their severance from blade is made with a pair of large scissors. Cut end is then quickly smoothed by

MONSANTO CHEMICALS — PLASTICS

Polyester Resins Becoming Leaders In Plastic Industry

1 A corner in the chemical business —the polyester resin group—is already living up to its advance billing.

Field reports from various parts of the country show that polyester resins are making their mark in the fabrication of a wide variety of products. Using this group of compounds, manufacturers can mold 37-foot sailing hulls in one operation . . . produce strong, light-weight automobile bodies . . . turn out countless other products such as luggage, pipe, outdoor signs and many more items.

These low-pressure laminating and contour molding resins are produced by copolymerizing Monsanto's styrene monomer in varied proportions with unsaturated polyester resins. They have tremendous potential when used to laminate fiber, glass cloth, paper and other materials. They also are excellent for contour-molding both large and small lay-ups, with little pressure and low heat.

Market doubles in three years

The field of application for these laminates and moldings is so promising that conservative estimates show the market doubling every three years.

Monsanto has assumed a position as a leading supplier of raw materials used in polyester resins.

From this one company you can obtain the maleic or phthalic anhydride which reacts with a polyalcohol. Styrene monomer for copolymerization is available from Monsanto's new plant at Texas City.

Because it furnishes these three products Monsanto is being selected by a wide number of manufacturers as headquarters for raw materials used in polyester resins.

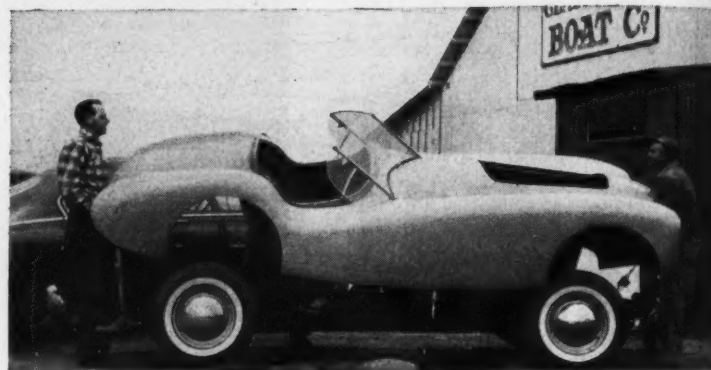
For more information, send in the coupon on the opposite page.

FOR YOUR INFORMATION

Many valuable Monsanto publications that might be worth your attention are available to you. This means that you can get the latest information on the products and services that Monsanto has to offer.

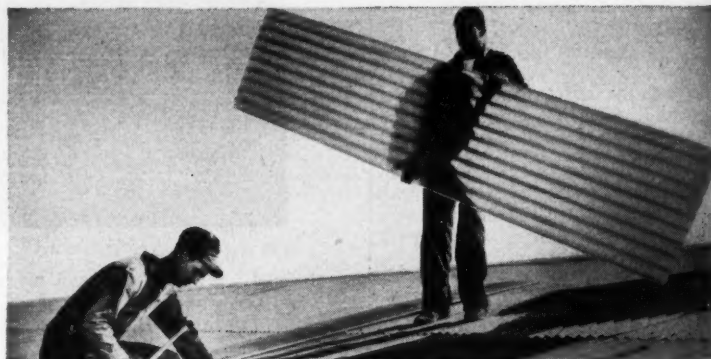
For your convenience, we have prepared a list of the publications that are available to you. This list is located on the opposite page.

Additional copies of any of these publications will be provided by our Monsanto Sales Office in response to your request for copies or further information.

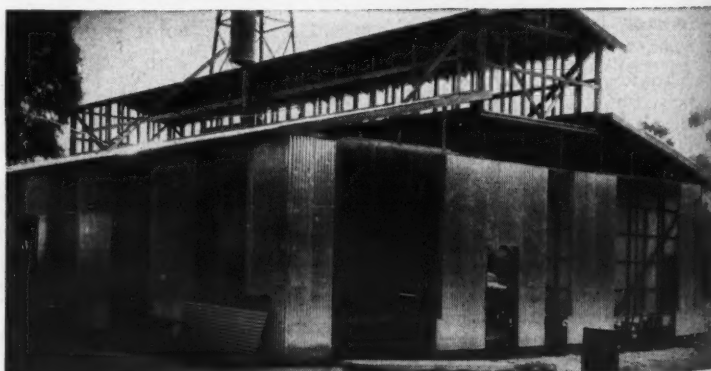


AUTOMOBILE BODIES of light-weight, high-strength polyester resin are now being tested.

UNITED STATES RUBBER COMPANY



ROOFING for industrial buildings can now be made from polyester resins made with Monsanto's styrene monomer.



INDUSTRIAL BUILDINGS use polyester resin panels for exterior covering because they are weather-resistant, translucent and inexpensive.

Maleic Anhydride Briquettes Available

2 Chemical processors are now using maleic anhydride in briquette form (a Monsanto exclusive) to increase operating efficiency.

Processors report that these briquettes offer several advantages. Their compact size—about one and three-quarter inches in length, plus a highly uniform shape, makes the briquettes ideal for fast weighing and handling.

The briquette shape is growing in user popularity for another reason, too—dusting is minimized with this form of maleic anhydride. In addition, the convenient 80-pound bag the briquettes are packed in can be easily palletized. This simplifies material-handling problems inside the plant.

Caking is also virtually eliminated with this form of maleic, and moisture pickup minimized.

3

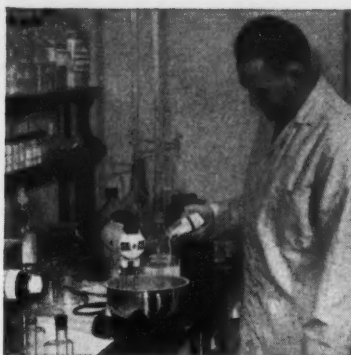
Announcing ... The New and Improved SANTOMERSE 80

- Lighter Color
- Faster Wetting
- Greater Sudsing

All these advantages go to work for you when you put the new Santomerse 80 in your formulation. Santomerse 80 provides you with a synthetic detergent in concentrated form. It is recommended for use wherever excellent sudsing and wetting and optimum detergency are required. For details use the coupon.



Fertilizer in bag on right has Santomerse No. 1 (spray-dried) added. Bag on left does not include Santomerse. Note difference in caking.



James E. Seymour, Chief Chemist, Illinois Farm Supply Company, adding Santomerse No. 1 (spray-dried) to a test batch of fertilizer.

Wetting Agent Aids New-Type Fertilizer

4 The development of a new-type fertilizer was announced at a recent meeting of the American Farm Research Association by Mr. James E. Seymour, Chief Chemist for the Illinois Farm Supply Company.

According to Mr. Seymour, the new plant food, called "Gro-Flo," flows easily through grain drills, fertilizer attachments and other types of applicators because of its uniform particle size. It also exhibits unusually good stability in storage.

During his talk, Mr. Seymour described the experiments which led to the discovery that a faster and more complete reaction of mixed fertilizer ingredients would result through the use of minute amounts of surface-active agents. The result, he said, is much shorter curing time and a non-hardening, free-flowing product of uniformly high analysis.

The surface-active agent used by the Illinois Farm Supply, Mr. Seymour said, is Santomerse No. 1, an all-purpose wetting agent manufactured by Monsanto Chemical Company.

The specific grade of Santomerse No. 1 used is light in density and spray-dried. This all-purpose wetting agent is of the anionic type and is widely used as an emulsifier, dispersant and wetting agent in the textile, dairy and industrial cleaning fields.

Manufacturers of fertilizers find the use of Santomerse has several advantages. It cuts costly aging time and permits a faster rate of bagging of finished product. It reduces the tendency of mixed goods to set up and harden in bags during long periods of storage. Moreover, the finished product retains an improved texture, free of hard lumps which formerly caused clogging of applicators. For complete details on this new application for wetting agents, send in the attached coupon.

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle, Twin Cities. In Canada, Monsanto Canada Limited, Montreal.

Santomerse: Reg. U. S. Pat. Off.



SERVING INDUSTRY... WHICH SERVES MANKIND

SEND LITERATURE:

- ☐ Booklet, "Build Bigger Business with Better Products Made from Styrene Monomer."

SEND INFORMATION:

- ☐ Maleic Anhydride
☐ Phthalic Anhydride
☐ New Santomerse 80
☐ Santomerse No. 1

MONSANTO CHEMICAL COMPANY

1700 South Second Street, St. Louis 4, Missouri

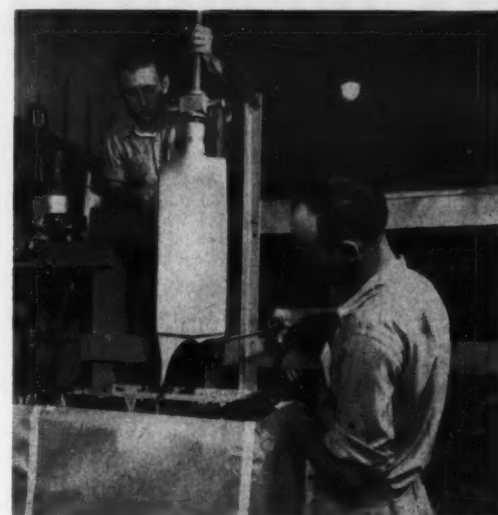
Please send, without cost or obligation, information or literature as indicated at left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....



Plastic drippings from end of fan blade are cut off with a pair of large scissors

hand. Seal at blade tip is complete and can be noticed only by close examination since plastic contracts and adheres closely to blade as it dries.

According to manufacturer, pure plastic had not been applied to industrial fan blades, except in laminate form, prior to this application. Lamination required hand-forming of plastic sheets after they had been softened by solvents and was exacting and time-consuming.

One of keys to successful use of plastic was development of a primer completely compatible with laminated wood of fan blade and coating. Tests show that plastic coating will not crack or craze under all normal uses of industrial fans.

Liquid-plastic coating was developed jointly by Tennessee Eastman Co. and Metal Products Div. of Koppers Co., Inc. Following stringent tests, it has been adopted for use on all sizes of Aeromaster Industrial Fans made by latter company, which range from 4 to 20' in diameter. Plastic coating adds improved serviceability to desirable qualities already found in laminated wood blades—light weight with resultant savings in power costs, and resistance to fatigue because of wood's own natural resiliency.

(Courtesy of Koppers Co., Inc., Dept. CP, Pittsburgh 19, Pennsylvania.)

Illustrates features, uses of oxygen-nitrogen units

Twelve-page catalog discusses and illustrates many features and applications for complete line of oxygen-nitrogen generating equipment. Typical uses, capacities, operating features, advantages, and specifications are outlined. Charts, photos, and line drawings illustrate specifications and features of equipment.

Cat 52 is issued by Air Products, Inc., Dept. CP, PO Box 538, Allentown, Pa. When inquiring specify CP 6558 on handy form, pages 2 and 3.

When inquiring check CP 6557 on handy form, pgs. 2-3

Another new development using

B. F. Goodrich Chemical raw materials



B. F. Goodrich Chemical Co. does not make this pipe. We supply the Geon materials only.

From a golf course—plastic pipe idea!

CORROSION-PROOF...RESISTS CHEMICALS...LIGHT WEIGHT

THIS rigid polyvinyl plastic pipe carried by the boy will serve for years in an underground irrigation system for a golf course. And—it's a pipe with many possible uses in chemical processing and other applications.

The manufacturer found every quality he needed in Geon polyvinyl chloride resin for this plastic pipe. It resists soil acids or alkalies and electrolysis—vital for sub-surface installations. It needs no protective coating or wrapping. All adding up to reduced maintenance costs.

There are more Geon advantages—and economies. Polyvinyl plastic pipe like this can be made rigid or flexible,

useful for underground or overhead piping to carry gases or liquids.

It can be made light enough for a youngster to lift a length easily. Polyvinyl plastic pipe is four to six times lighter than steel pipe of equal length, diameter and wall thickness. Savings for you in freight and shipping costs, in handling, racking and stringing costs.

This plastic pipe is another example of how Geon materials help improve products and lower costs. For Geon materials can be made resistant to heat and cold, weather, aging, abrasion and most chemicals. Color range is wide. And they come as resins, latices or compounded plastics—can

be extruded, molded, coated, cast or dipped. For helpful technical advice, please write Dept. GE-6, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

When inquiring check CP 6559 on handy form, pgs. 2-3

MATERIALS

Report on cerium drier use in various protective coating systems . . .

data indicate it should be considered in fume-proof paints and baking white enamels

Three types of coating systems were investigated by manufacturer in evaluating the use of his Nuodex Pure Cerium Naphthenate 6% as a drier: air-dry clears, pigmented air-dry, and baking finishes.

Air-Drying Clears

With Epon Ester D-4 (dehydrated castor) cerium proved of no value. With Epon Ester LR-8 (linseed-rosin) 0.60% cerium was equal to 1.0% lead.

Cerium was of no value as the sole active drier or as an active drier with any auxiliary drier in a raw-bodied oil blend, a soya alkyd, and an oleoresinous spar varnish. In these same vehicles, with manganese, 0.10% cerium was superior to 0.50% lead or 0.20% calcium in the alkyd. With cobalt, 0.10% cerium was again better than 0.50% lead or 0.20% calcium but this time in the spar varnish.

In six other air-dry finishes, cerium showed too little advantage except in one instance. In a styrenated alkyd, with manganese, it was the best auxiliary drier of the series.

Pigmented Air-dry Coatings

In enamels, generally, it was found that cerium is roughly equal to 3 to 5 times as much lead as an auxiliary drier. No general statements can be made as to where cerium could be used to advantage as each enamel apparently presents its own problem.

In fume-proof paints, cerium is 3 to 5 times as good as calcium as a drier when used with manganese. With cobalt as active drier, cerium is about twice as effective as calcium. In staining, calcium stains slightly more than cerium when used with manganese. Cerium discolors no more than calcium in H₂S atmospheres when used in fume-proof paints.

Baking Finishes

Of the various enamels included in the examination, cerium is of greatest interest in white based on alkyd vehicles or Epon esters. In oleoresinous vehicles or alkyds other than white, other driers can be used to greater advantage.

In white alkyds, cerium alone is about equal to either cobalt or manganese in attaining film hardness but causes appreciably less staining. With manganese, the use of cerium apparently minimizes its staining and acts as an excellent auxiliary drier. With an Epon-dehydrated castor enamel, greater film hardness with less staining as compared to cobalt or manganese can be attained.

In summary then, the above work indicates cerium should be considered in the following applications: 1) fume-proof paints, where the utmost in initial white is desired.

2) baking white enamels where the staining imparted by even low percentages of other driers is objectionable.

Some specifications of Nuodex Pure Cerium Naphthenate 6% (ceric form) follow:

% Cerium	6.0 ± 0.1
Color maximum, Gardner	17
Clarity	Brilliant
Odor	Mild
Specific gravity @ 80°F	0.910-0.945
Pounds per gallon @ 80°F	7.58-7.87
Solids maximum, %	52
Viscosity maximum	
@ 80°F	Gardner A
@ 20°F	Gardner H
Moisture maximum, (Dean-Stark) %	0.4
Flash point minimum, °F	104

(Reported by Nuodex Products Co., Inc., Dept. CP, Elizabeth F. N. J. . . . or for more information check CP 6560 on handy form, pages 2 and 3.)

Describes facilities, operation of ore testing laboratory

Eight-page bulletin explains operation of ore testing laboratory. Objectives of organization are discussed in terms of techniques and machines. Hints on ore test controls are given. Conditions as they will be met in commercial mill operation are simulated as nearly as possible. Batch test and analytical laboratories as well as continuous pilot mill are described. Procedures are outlined.

Bul T4-B12 is issued by Denver Equipment Co., Dept. CP, P.O. Terminal Box 5268, Denver 17, Colo. When inquiring specify CP 6561 on handy form, pages 2 and 3.

Revolution in packing is promise to AICHe men . . .

products and manufacturing improvement indicate better protection for chemicals

Members of the AICHe attending the Chicago meeting heard Mr. Donald K. Ballman, Sales Mgr. of Dow Chemical Co., Midland, Mich., promise a revolution in packing within the next ten years. He specified that improvements in chemical products and manufacturing techniques will result in better protection for chemicals. Mr. Ballman went on to say that careful selection of containers for shipping is important from the standpoint of public safety and to preserve the product and prevent contamination of materials the container may contact. To illustrate the case, he pointed out that "even distilled water may become a dangerous chemical if it chances to leak upon a fine piece of furniture or a sack of sugar."

In addition to describing several containers and their specific use, the address covered a few recent types and the chemicals for which they are serviceable. The engineers were told of federal, ICC, and US Coast Guard regulations governing shipment of hazardous chemicals. In reference to this factor, Mr. Ballman stated that manufacturers are liable to lawsuits for improper marketing of hazardous chemicals, since no federal law specifically regulates labeling.

(Reported through cooperation of American Institute of Chemical Engineers, 120 E. 41st St., New York 17, N. Y.)

NEW... Onyx Catalog of Surface-Active Agents

Here is a concise, informative listing of the outstanding Onyx Surface-Active Agents... Cationic, Non-Ionic and Anionic. It will be of material help to you in planning new products or improving existing products.



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In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. John's, Que. For Export: Onyx International, Jersey City 2, N. J.

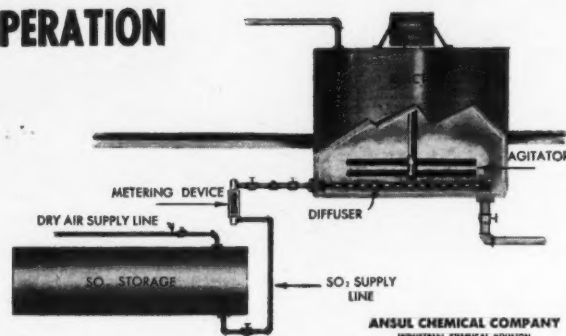
When inquiring check CP 6562 on handy form, pgs. 2-3

**BETTER
QUALITY CONTROL
IMPROVED
PROCESS EFFICIENCY**

**ACIDIFY..
OR NEUTRALIZE..
BLEACH
PRESERVE
DEOXIDIZE
REDUCE
DECHLORINATE..**

...IN ONE Continuous OPERATION

**...WITH AN
ANSUL
CONTROLLED SO₂
DIFFUSION SYSTEM**



CONSULT ANSUL'S STAFF of trained and experienced Chemical Engineers.

If you have a problem or process involving acidifying, neutralizing, bleaching, preserving, dechlorinating, reducing, deoxidizing, etc., Ansul's Engineers can be of service. Call on them for assistance, without cost or obligation.

ANSUL SO₂ is a volatile, easy to control, *multi-purpose* acid. It permits the user to . . . 1) combine a number of individual process steps into one simple operation . . . 2) easily remove many product impurities sometimes difficult to eliminate . . . resulting in *improved process efficiency* and *better quality control* of the finished product.

New uses of liquid sulfur dioxide are continually being developed. Its **HIGH PURITY, GREATER ECONOMY, and EASE OF CONTROL** provide a versatile and effective chemical to a great variety of industries.

Write for File No. 402 for more information and if possible, include a description of the application in your plant. Our Technical Staff will help you take full advantage of the benefits outlined above.



ANSUL
Chemical Company

INDUSTRIAL CHEMICALS DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF INDUSTRIAL CHEMICALS, SPECIAL CHEMICALS, REFRIGERANTS, REFRIGERATION PRODUCTS AND DRY CHEMICAL FIRE EXTINGUISHERS. DISTRIBUTORS OF DU PONT "FREON" REFRIGERANTS

MATERIALS

Textile fibers improved by use of functional finishes . . .

trend toward treated fibers may make it desirable to include properties of textile on label

Increasing employment of chemicals that improve qualities of natural and synthetic fibers may make it desirable to include properties of textile on label along with different fibers used. Many customers want to know what textile products will do, as well as which fibers are in material. Growing acceptance of manufacturer's line of functional textile finishes is shown by seal of approval granted by Good Housekeeping.

Chemical covered by seal and properties which they impart to fiber are as follows: Lanaset Finish, which gives durable shrink and felting resistance to wools; Superset Finish, which adds wrinkle resistance to cottons; Permel Finish, which provides water repellency to cotton, wool, and synthetic fibers; Permel Plus Finish, which supplies both wrinkle resistance and water repellence; and Pyroset Finish, a fire retardant for cotton, wool, and rayons.

(Products of American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y.)

Vinyl plasticizers incorporate normal properties plus stabilizing action . . .

ability to minimize resin degradation due to heat and light eliminates addition of stabilizers

Uses: Broad applications in formulation of polyvinyl resins calling for properties of plasticizer.

Features: In addition to possessing generally good plasticizing properties, epoxy fatty acid esters have an intrinsic stabilizing action by virtue of their ability to remove hydrochloric acid formed in the initial degradation of the vinyl polymer, thereby preventing the acid from catalyzing further polymer breakdown.

Description: Epoxy fatty acid ester plasticizers are produced by means of epoxidation of unsaturated fatty acid esters of monohydric and polyhydric alcohols with a peracid. Although epoxidation and hydroxylation are the same reaction, low temperature, short reaction time, and low concentration of hydrogen ion favor epoxidation.

Several polyvinyl resin compositions containing epoxy fatty acid esters have been described in the literature. Since plasticizers are generally polar compounds which modify the strong secondary forces linking polymer chains, thereby imparting to the polymer a greater freedom of motion resulting in elasticity and flexibility, epoxy fatty acid esters have increased polyvinyl chloride solvency which is easily understood if the polar epoxy group is considered to be an internal ether.

To illustrate the compatibility of a typical epoxy ester, prepared by epoxidation of poly unsaturated fatty acids from cottonseed, ester showed very good compatibility with polyvinyl chloride and ethyl cellulose; good compatibility with nitrocellulose, poly-

When inquiring check CP 6563 on handy form, pgs. 2-3

styrene, and methyl methacrylate; and poor compatibility with cellulose acetate.

Since by virtue of the epoxy group in the plasticizer chain these compounds are hydrochloric acid scavengers, they possess inherent stabilizing properties. By absorption of hydrochloric acid produced during the initial degradation of the polymer, epoxy esters prevent subsequent catalysis of polymer breakdown which would yield color formation as a result of appearance of chromophoric carbon-carbon double bonds and then, in turn, appearance of carbonyl groups from oxidation of the double bonds.

Although epoxy esters may be used without stabilizers where processing conditions are mild, addition of metallic stabilizers greatly enhances stabilizing action even when less than conventional amounts of stabilizer are used.

(Courtesy of Buffalo Electro-Chemical Co., Inc., Dept. CP, Buffalo 7, N. Y., whose Dr. F. P. Greenspan presented the information in a paper entitled, "Epoxy Fatty Acid Esters — A New Class of Vinyl Plasticizers," presented before a recent meeting of the American Chemical Society.)

Time Lindane retains power to kill insects doubled by adding resin . . .

chlorinated polyphenyl-Lindane mixture also does not develop usual whitish powder deposits

Lindane spray mixture has been produced that retains power to kill susceptible insects at least twice as long as regular Lindane sprays. Mixture has been produced in experiments by a chemist-entomologist research team of the US Dept. of Agriculture. Longer lasting insecticide was obtained by addition of chlorinated polyphenyl (a resin-like material) to Lindane. This Lindane mixture also develops none of usual whitish deposits on a surface, but remains practically invisible throughout its toxic life.

Research team found that the Lindane spray mixture (used at rate of 50 mg of actual Lindane per square foot) kills 80% of all roaches exposed for 2 hours to a 60-day old treated surface. Regular Lindane sprays killed only 4% of roaches after 60 days. Mixture also was shown to remain lethal to 66% of roaches after 90 days.

When solutions or emulsions of regular Lindane are sprayed on a surface, material tends to crystallize out, leaving unattractive white powder residue. Since Lindane has higher vapor pressure than other residual insecticides (such as DDT), it evaporates more quickly and loses its killing power.

Addition of chlorinated polyphenyl to Lindane lowers its vapor pressure, resulting in slower evaporation. Hence, effectiveness is increased and appearance of residue is improved. As Lindane in blend evaporates off surface of spray film, body of film acts as reservoir from which more Lindane diffuses to film surface. In this way insecticidal properties are constantly renewed.

(Reported by U. S. Dept. of Agriculture, Agricultural Research Administration, Washington, D. C.)



To meet the requirements of higher operating temperatures, manufacturers are fortifying their refractory mixes with more and more ALCOA Alumina. It's a sure way to improve performance and reduce costly down-time.

For instance, ALCOA Alumina gives refractories:

- EXTRA strength and stability under load at high temperatures
- EXTRA high resistance to spalling, abrasion, fluxing
- EXTRA low coefficient of expansion
- EXTRA high resistance to thermal and mechanical shock
- EXTRA low porosity and shrinkage

Furthermore, these performance characteristics improve in almost direct ratio to the alumina content of each refractory!

If you are looking for better refractory performance at higher operating temperatures, look for refractories containing ALCOA Alumina. You'll find they last longer . . . require fewer tear-downs . . . are most economical in the long run.

We do not make refractories, but we shall be glad to discuss the characteristics and properties of the various grades of ALCOA Alumina. Write to ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION 606-M Gulf Building, Pittsburgh 19, Pennsylvania.

Alcoa Chemicals



ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 6564 on handy form, pgs. 2-3

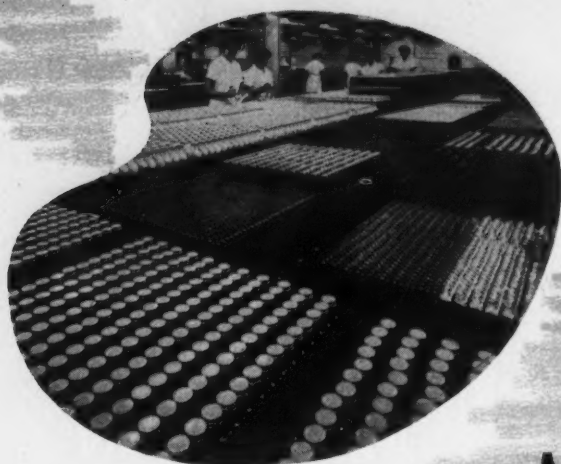


Fig 1—"Pulvule" bottling room with its trays of bottles full of filled gelatin capsules, all on roller conveyors. In center background women are pushing cotton stuffing into filled bottles to prevent damage to capsules

Moisture-sensitive Drugs Protected by Plant-wide Air Conditioning

Continuous optimum conditions maintained by chemical absorbent-type system are reflected in low unit cost and high quality of products

HYGROSCOPIC pharmaceuticals, such as powders and gelatin capsules, are fully protected by air conditioning covering entire plant of Eli Lilly and Co. in Indianapolis. For those rooms requiring low humidity, ultra-dry air is delivered by chemical absorbent-type dehumidifying units. Ability to maintain optimum indoor-weather conditions, year-around, is reflected in max production at low unit cost and adherence to rigid quality specifications. Over past seven years equipment has met the strict requirements without any product contamination and with low operating and maintenance costs.

Processing spaces in plant are maintained at conditions ranging from 80°F and 15% relative humidity to 65°F and 35% RH. One such operation is "pulvule" bottling room shown in Fig 1, where filled gelatin capsules are placed in different size bottles. These bottles are placed in racks and moved along bottling line on roller conveyors. They are filled, stuffed with cotton to prevent damage in bottle handling, and then capped.

Schematic diagram of air conditioning system for this room is drawn in Fig 2. Temperature and humidity conditions maintained here are 78°F and 25% RH. Low humidity condition prevents gelatin capsules from becoming pliable and sticky. Due to large space to be conditioned, total air volume amounts to 25,000 cfm, only 2000 cfm of which is fresh air.

Large volume of return air at room conditions is mixed with the small volume of fresh air. Max conditions of fresh air are 100°F and 145 grains of moisture per lb of dry air (7000 grains = 1 lb of water), or 50% RH. Total air mixture prior to filtering and dehumidifying is at conditions of 80°F and 46 grains/lb (30% RH). This low relative humidity is accounted for by large per cent of recirculated air used.

Two 12,500 cfm capacity Kathabar air washers, one of which is shown in Fig 3, treat air so that it leaves units at 74.5°F and 22 grains/lb, 17% RH. Under max operating conditions, total moisture removed by dehumidifying system is 1132 gallons per day. After-cooling coils are utilized to lower air temperature further to 68°F, prior to delivery to room. This is done without altering absolute moisture content of air, although relative humidity becomes 20%.

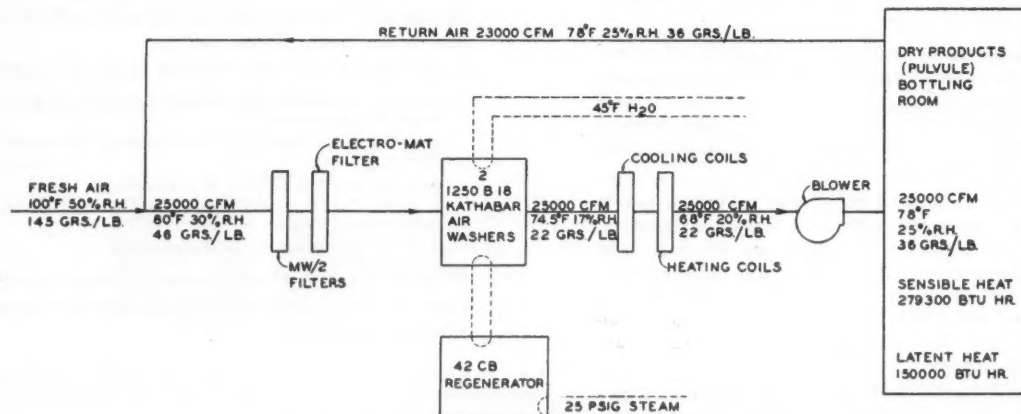


Fig 2—Schematic view of air conditioning system for bottling room

This chemical absorbent-type dehumidifying equipment uses a very hygroscopic solution, consisting chiefly of lithium chloride base. This solution is sprayed into a chamber, called an air washer, through which passes air to be conditioned. Upon contact with absorbent, air loses a controlled amount of its moisture.

Control of degree of dehumidification is determined by temperature and amount of cooling medium flowing through coils in air washer, over which air and solution pass. The cooler the solution, the more moisture it is capable of absorbing. Cooling media may range from cooling tower water to extremely low temperature refrigerants.

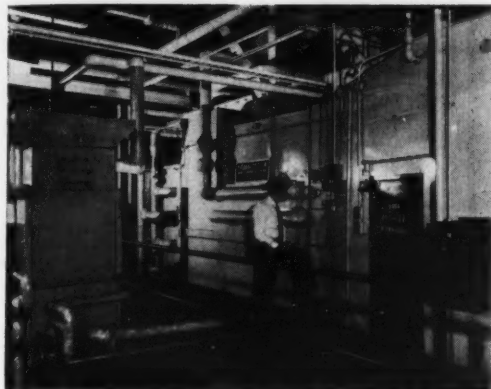


Fig 3—One of two 12,500 cfm capacity chemical, absorbent-type, dehumidifying air washers serving bottling room. At extreme left is absorbing solution regenerator which services both air washers in this one air conditioning line

Operation of equipment is continuous and entirely automatic. Regeneration of moisture-laden absorbent is accomplished in a separate chamber, where solution passes over low pressure steam coils. Here excess water in solution is driven off and then exhausted to atmosphere by a scavenger air stream. Reconditioned solution is then returned to air washer at full strength, and is ready for another dehumidifying pass.

Depending upon temperature and quantity of cooling medium, certain amount of air temperature reduction is accomplished directly, depending upon temperature and quantity of cooling medium used in air washer chamber. Sometimes it is necessary to employ separate after-cooling in this type system to attain final air temperature control.

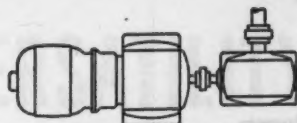
Humidity conditioning system of plant extends into penicillin processing department, antibiotics filling room, and the gelatin capsule sorting and boxing rooms. "Pulvule" dusting, sorting, and trituration room, and "enseal" manufacturing department where time disintegrating coated tablet is made, are conditioned in same manner.

(Kathabar air conditioning equipment is manufactured by Surface Combustion Corp., Dept. CP, Toledo 1, Ohio.)

Prepared from article by
GORDON HALL
Air Conditioning Engineer
Eli Lilly and Co., Indianapolis, Indiana

Ask yourself these speed reduction questions . . .

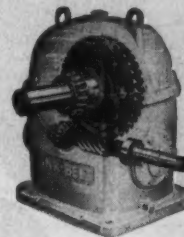
1 Do I want high-ratio reduction with right-angle takeoff?



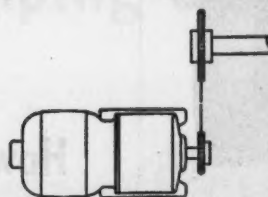
Drawing shows motorized P.I.V. variable speed and worm gear drives direct-coupled.

Then your answer is a **LINK-BELT Worm Gear Drive**

Reduction ratios: 3.1:1 to 8000:1
Torque: 1,400 to 123,000 in. lbs.
Output shaft rpm: 0.22 to 564



2 Is space at a premium?



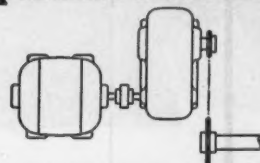
Drawing shows gearmotor with roller chain drive.

Then your answer is a **LINK-BELT Gearmotor**

Reduction ratios: 6.2:1 to 292:1
Hp range: 1 to 30
Output shaft rpm: 6 to 280



3 Will I need high hp capacity with parallel shaft takeoff?



Drawing shows motor with herringbone gear and roller chain drives

Then your answer is a **LINK-BELT Herringbone Gear Drive**

Reduction ratios: 2.84:1 to 318:1
Hp range: 1/2 to 1000
Output shaft rpm: 2 to 600



Yes, LINK-BELT builds all 3

WHATEVER factor governs your speed reducer selection—ratio, space, shaft position, shock loading—you can get the exact answer to your needs from Link-Belt's complete line of enclosed gear drives.

For Link-Belt builds a full range of sizes and ratios in all three types—Helical, Herringbone and Worm. When a Link-Belt power transmission engineer analyzes your conditions, he can recommend the spe-

cific drive to meet your specialized requirements.

For complete information, call the Link-Belt office near you.

LINK-BELT
ENCLOSED GEAR DRIVES

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12,809

When inquiring check CP 6565 on handy form, pgs. 2-3

GET THE **RIGHT** AGITATING EQUIPMENT FOR YOUR PROCESSES



Model TA Agitator Drive
(Ratios from 122:1 to 400:1).

Model KBA Side-Entering
Agitator showing compact
"piggy-back" design.

Split-hub
Propeller-Type
Stirrer.

No doubt about it, the right
agitating equipment costs less
in the long run. It costs less
because it produces more...
because it lasts longer... be-
cause it conserves processing
time... because it utilizes
power efficiently. May we show
you why hundreds of the na-
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Only Nettco offers
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agitating equipment:

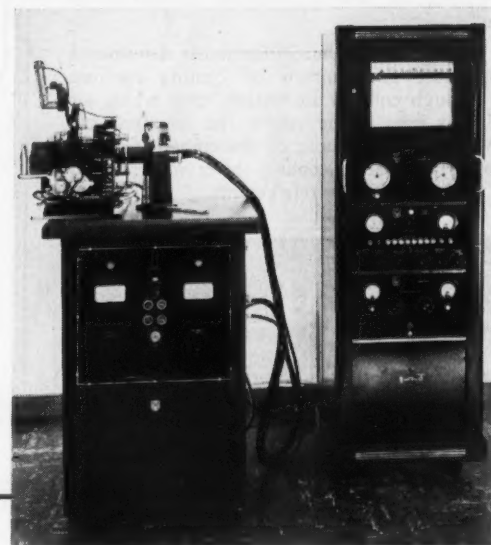
- ✓ Tank-top Agitator Drives
- ✓ Double-motion Agitator Drives
- ✓ Side-entering Agitator Drives
- ✓ In-the-pipeline Mixers
(Flomix—Pat'd.)
- ✓ Stirrers — turbine, propeller,
paddle
- ✓ Agitator fittings—couplings,
bearings, etc.



Foremost in ENGINEERED AGITATION for over half a century

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Ideas



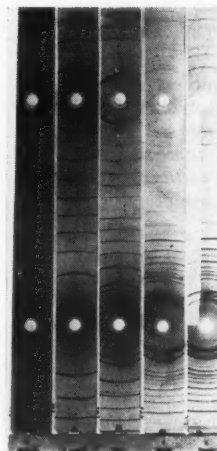
Typical X-ray diffraction unit

How X-ray Diffraction Gets Answers To Difficult Questions

Which clay is a good adsorber? What does
processing do to rubber structure? Where
does boiler scale come from? Engineer John
Buhler shows how to find answers to these
questions with X-ray diffraction techniques

Clays for Decolorizing

NOT many natural
minerals can act as
decolorizers, even after
treatment and process-
ing. In fact, two clays
with the same chemical
composition may have
different decolorizing
capabilities. This hap-
pens because of differ-
ences in crystal prop-
erties. X-ray diffraction
analysis not only identi-
fies clay minerals, but
can furnish plenty of
information about crys-
tal structure, particle



size, degree of hydration, and
trace minerals present.

Clays can be evaluated before
activation procedures are un-
dertaken. Carbonate content can be
followed in the activation process
by following changes in carbonate
lines. In this way the (reported)
optimum value of less than 3%
combined carbonates can be reached.
Similarly, some earths of high
bleaching power have high contents
of crystallites — with calcium and
magnesium which can be replaced
with hydrogen ion — which can

Typical pattern made with powder
camera by X-ray diffraction

CHEMICAL PROCESSING

be determined accurately by X-ray diffraction techniques.

Furthermore, X-ray work can show type of clay to which a sample belongs. Each type has an entirely different pattern. And dehydration at elevated temperatures can be found by the amorphous structure that results.

Since particle size is an important criteria of effectiveness, the whole activating process can be adjusted to produce the most effective adsorber by measuring particle size and correlating it with activity.

X-ray diffraction can be used in a similar way with Zeolites, can be used especially to advantage in identifying them.

Rubber, Plastic Polymers

Rubber and rubber-like materials commonly have molecular weights of 50,000 to 300,000. It is well known that chemical analysis of such large molecules is practically impossible. But, under the proper conditions, X-ray diffraction can be used to unearth a great amount of information about them. Unstretched rubber gives an amorphous pattern, stretched rubber shows a fiber structure, and thin films of latex which are extended and compressed produce very usable patterns.

It has been established, for example, that the "crystal size" for some stretched rubber was 600 x 500 x 150 Angstroms. It can also be shown that the degree of orientation in rubber is increased by working.

Rubber chemicals, especially zinc oxide, gas black, magnesium carbonate, barium sulfate, diatomaceous earth, and clays, have a great influence on quality of the finished rubber. Their particle size and mineralogical nature can easily be determined by X-ray diffraction technique — and it offers one of the most reproducible methods for quality control. These chemicals are even more important in synthetic rubbers since they are more sensitive to added material, in general, than natural rubber.

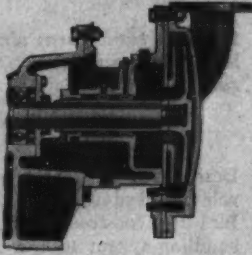
Boiler Scales

Identifying corrosion products and boiler scales in heat exchangers is a critical problem in the petroleum industry, though it is common to many industries. Formed under conditions not found in nature, these materials show subtle differences from common related chemicals and treatment of them is necessarily experimental.

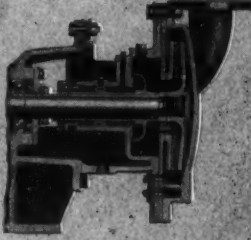
Scale found in high-pressure boilers can be analyzed chemically and spectrographically, but this information is inadequate for formulating corrective and preventive measures. X-ray analysis, on the other hand, adds information about the form in which the scale exists and can identify polymeric material. This information can determine pre-treatment for water and can indicate which acids and concentrations effectively remove the scale. X-ray analysis provides working information.

(Material for this article was taken from a report by John Buhler of Research & Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y.)

ALLIS-CHALMERS
PROCESS PUMPS



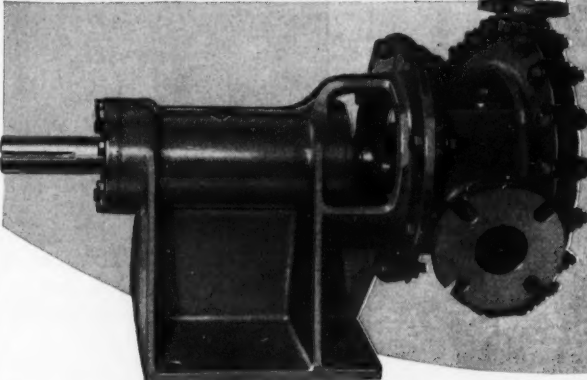
Standard Stuffing Box — for suction lift. Stuffing box on the suction side limits pressure on packing to suction pressure. Under suction lift conditions, the liquid being pumped does not enter the stuffing box.

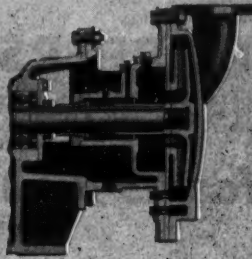


Equiseal Stuffing Box — for suction heads to 15 feet. The Equiseal stuffing box is equipped with an auxiliary impeller which produces a low pressure area in front of the packing. This low pressure area prevents the liquid being pumped from entering the packing on suction heads up to 15 feet at 1750 rpm.

VERSATILITY

that Cuts Your Pumping Costs





Mechanical Seal — for suction heads over 15 feet. The Allis-Chalmers Process Pump may be fitted with a variety of mechanical seals for conditions where the suction head exceeds 15 feet. Each application is individually engineered.

YOU CAN HANDLE A WIDE RANGE of products with one type of pump when it is an Allis-Chalmers Type P Process Pump. Each of the three sealing methods shown here is interchangeable on any Type P pump with a minimum of alteration to the pump itself. No new major parts or permanent alterations are required to use any of these sealing methods.

CHOICE OF MATERIALS

The Allis-Chalmers Process Pump is available in a wide choice of materials to handle many combinations of abrasiveness and corrosiveness in the liquid

to be pumped. Usual materials include aluminum bronze, *Ni-Resist*, 316 stainless steel, and 18% chrome steel, plus almost any special material which may be required, including non-machinable alloys. Parts subject to varying rates of wear are separated for easy replacement.

GET DETAILS

For complete details on the Allis-Chalmers Process Pump plus competent engineering assistance, call your nearby Allis-Chalmers District Office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin for Bulletin 52B6615.

A-3902

Equiseal is an Allis-Chalmers trademark.

ALLIS-CHALMERS



When inquiring check CP 6567 on handy form, pgs. 2-3



KOPPERS PHTHALIC ANHYDRIDE *known for its high quality*

● "When water-white phthalate plasticizers are required, we prefer Koppers Phthalic Anhydride."

That's what so many of the country's best-known manufacturing concerns have told us about this quality product.

Koppers Phthalic Anhydride is a white solid in the form of small, free-flowing flakes. It has a minimum purity of 99.7%.

Its industrial importance is due primarily to the reactivity of the anhydride group with alcohols and the properties of the derivatives thus formed.

Phthalic Anhydride is used as a raw material in the manufacture of alkyd resins, in ester-type plasticizers, dyestuff intermediates, food preservatives, medicinals, pharmaceuticals, insect repellents and perfume fixatives.

A request on your letterhead will bring you complete information on Phthalic Anhydride as well as an experimental sample. Write to Koppers Company, Inc., Chemical Division, Dept. CP-12, Koppers Building, Pittsburgh 19, Pa.



KOPPERS COMPANY, INC.
Chemical Division, Dept. CP-12
Koppers Building, Pittsburgh 19, Pa.

When inquiring check CP 6568 on handy form, pgs. 2-3

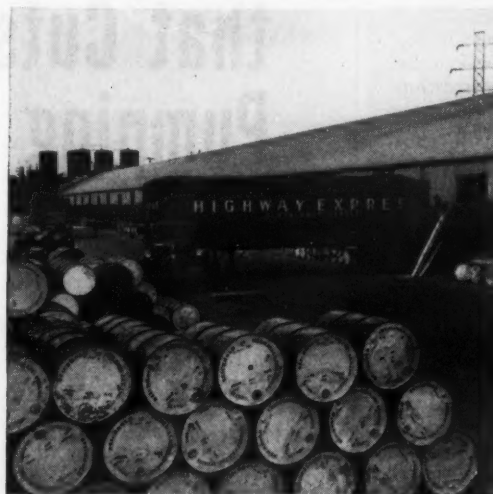
IDEAS

Storage tank farm simplifies handling and storage of resin solutions . . .

7 tanks have total storage capacity of 175,000 gal; 3 methods available for packaging, shipping

Desiring to expedite delivery of their seven largest volume alkyd resin solutions, Reichhold Chemicals, Inc., has constructed an efficient bulk storage and handling system at their Detroit, Mich. plant. The company, manufacturers of synthetic resins, designed the system to insure uniform quality and rapid, efficient delivery of standard items to their customers.

Alkyd resin manufacturing facilities are located in one area of the plant while a long warehouse for storage and shipment is located in an entirely different area along a railroad siding on one side and a



Warehouse and loading facilities are adjacent to storage tank farm, tanks located in background

truck dock and driveway along the other side. There is a public highway between this warehouse location and the manufacturing area.

In the manufacturing area the alkyd resin solids are cooked and then thinned with solvent, after which the resin solution is filtered. The finished solution is then pumped by positive displacement pumps through 3-inch pipe lines under the public highway to the finished resin solution tanks next to the warehouse.

Located within a concrete dike at the end of the warehouse, these seven vertical storage tanks each have a capacity of 25,000 US gal. They are 10' 6" in diameter, ordinary mild steel, and all-welded construction. They are mounted on legs and are equipped with dished bottoms to allow for complete drainage at the bottom center. Each tank is equipped with two large manholes on the side and near the bottom. One manhole is used for access to tank and the other is used for mounting an agitator. Side entering agitator is powered by 15-hp electric motor traveling at 1750 rpm. Gear reducer cuts shaft speed of agitator to 420 rpm.

Attached to end of warehouse and mounted about



In bulk—Cambridge wire cloth is available in any metal or alloy, in a wide range of sizes, from 20 x 250 mesh up to 4" openings, and in 9 basic weaves. Individual operators for each loom mean dependable uniformity of mesh count; thorough inspection before shipment further assures accurate adherence to your specifications. Years of experience guarantees a thorough understanding of your requirements. Many widely used types of weave and mesh are kept in our warehouse stock . . . ready for immediate shipment.

In fabricated parts—We'll quote on your specifications for shaker screens, filter leaves, sizing screens, or other fabrications . . . or, just give us the details of your product and processing and we'll design the part to do the job. For information or assistance on any problem involving industrial wire cloth rely on your Cambridge Field Engineer. See "Wire Cloth" in your classified telephone directory or write direct.

Send today for **FREE** illustrated catalog describing Cambridge industrial wire cloth and facilities for fabricating special wire cloth parts.



**The Cambridge
Wire Cloth Co.**
Dept. F • Cambridge 12, Md.

WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

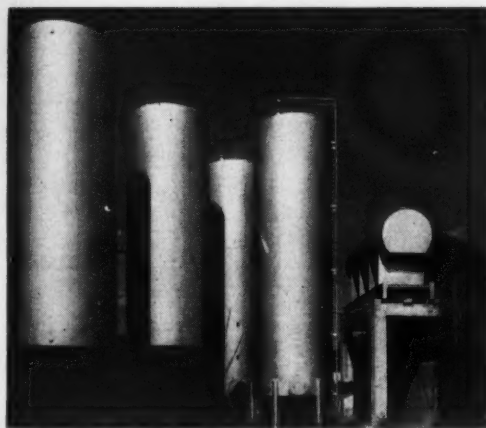
When inquiring check CP 6569 on handy form, pgs. 2-3

CHEMICAL PROCESSING

30 feet in the air is a weigh tank. Each of the seven finished storage tanks is used to store one particular alkyl resin solution that is sold in large volume in Reichhold's regular catalog line. As batches of one particular resin solution enter a storage tank they are blended together with the agitator to produce uniformity of quality in large quantity. Each resin is stored in individual tanks until need for shipment arises, and then it can be accurately packaged and shipped in any one of three different ways.

First, the resin solution can be pumped from the finished storage tank up into the large weigh tank mounted on a scale mechanism. When charge is accurately weighed, it can be dropped by gravity through a short pipe line into railroad tank car on adjacent siding.

Second, finished solution can be dropped by gravity through a short pipe line and into waiting tank truck standing on driveway-side of the warehouse.



Weigh tank and four of the vertical storage tanks used to store and handle finished resin solutions

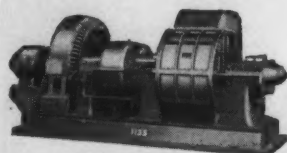
Third, finished resin solution can be pumped into adjacent warehouse to fill 55-gal steel drums by individual weight, ready for shipment to customers via railroad box car or truck.

(Information courtesy of Reichhold Chemicals, Inc., Dept. CP, 601-707 Woodward Heights Blvd., Detroit 20, Mich.)

Process forms difficult shapes from metal by "cold casting"

Possibilities in joining, forming dies, bonding abrasives, reproducing detail, eliminating costly machining, and making complex, accurate shapes by electrodeposition upon a shaped mandrel are discussed in 4-page booklet. Details of the process are given for 12 specific applications which suggest many others.

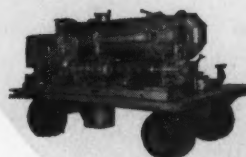
Physical properties, plating solutions, and operating conditions are given for copper, iron, and three forms of nickel deposits. Bul EZ-92/21 is issued by Dept. EZ, International Nickel Co., Inc., Dept. CP, New York 5, N. Y. When inquiring specify CP 6570 on handy form, pages 2 and 3.



Rotary Positive Blowers and Exhausters—capacities 5 cfm to 50,000 cfm.



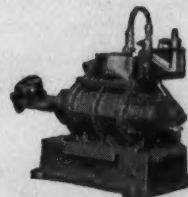
Rotary Positive Gas Pumps—capacities 5 cfm to 50,000 cfm.



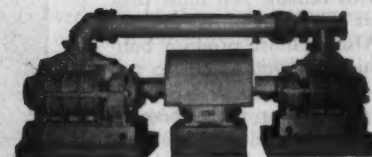
Inert Gas Generators—capacities 1,000 cfh to 35,000 cfh.



CENTRIFUGAL BLOWERS AND EXHAUSTERS
—built in single and multi-stage units, in capacities from 2,000 cfm to 100,000 cfm or higher, at maximum practical pressures. Standard designs meet most applications. Special units designed and built for unusual needs.



Positive Displacement Meters—capacities 4,000 cfh to 1,000,000 cfh.



Cyclodial Vacuum Pumps—capacities 500 cfm to 13,000 cfm.

WE *Specialize* IN YOUR PROBLEMS OF MOVING GAS OR AIR!

Your business probably is different when it comes to handling gas or air. You may want to move a thimbleful of gas—or create a cyclone of whirling air. But, no matter how your problem differs from your neighbor's, the chances are that we've met something pretty close to it, in our almost a century of experience of building such equipment.

Another reason why we know so much about this job is that it's all we do. Our customers range from the "giants of industry" to the neighborhood plant, both of whose production depends upon continuous, reliable, economical performance of air and gas handling units. Because we build the exclusive *dual-ability line* of Rotary Positive and Centrifugal Units, in a wide range of sizes, we offer a *dual choice* not available from any other maker—which permits completely unbiased recommendations.

So—if you have a problem today—or anticipate one a year or five years from now, we suggest you call upon the R-C Specialists—to give you a long-time, satisfactory answer. Write for bulletins on any specific equipment.

ROOTS-CONNSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC. • 1252 RICHLAND AVE. • CONNSVILLE, INDIANA

ROOTS-CONNSVILLE

Exclusive Specialists in Handling Gas and Air



When inquiring check CP 6571 on handy form, pgs. 2-3

IDEAS

Small bubbles of air add to workability of concrete . . .

decrease spalling and cracking
without strength loss

Addition of extremely small bubbles of air to concrete, within proper limits, by use of an air-entraining agent results in improved workability and easier placement. Spalling and cracking due to severe weather conditions are decreased. Increasing the air content does not cause a reduction in strength of concrete since less water is necessary in mix. In some cases the strength actually becomes greater.

Air is added to concrete by means of a surface active agent, which reduces surface tension of water, enabling it to hold air. Such a compound must not react chemically with cement and must produce air bubbles of a definite size. Also it must produce bubbles which do not break up too rapidly. The chemical which is known as Ayr-Trap meets these requirements.

This chemical is the combination of a fatty acid ester of a complex alcohol with an amine and glucoside extract, all in a synergic mixture. This neutral, brown-black liquid comes in 55 gal drums.

By the addition of one-half liquid ounce to a bag of Portland cement, 600 billion air bubbles are formed per cubic yard of concrete. Each bubble has a diameter of 1/25,000 of an inch.

These bubbles act to keep stresses and strains from forming in concrete by keeping water from entering voids, freezing, and causing pressures. Air-entrained voids are so small that water cannot readily enter them. Cement paste of air-entrained concrete has the appearance and the texture of whipped cream.

Increased workability allows reduction in labor costs of concrete construction. Chemical agent is being used in concrete pipe, foundations, roads, and a great number of other large and small installations.

(Ayr-Trap is product of A. C. Horn Co., Inc., Div. of Sun Chemical Corp., Dept. CP, Long Island City 1, N. Y.)

New

Possible applications for FIBERFRAX fiber

THERMAL INSULATION

- Used loose, bonded, packed, or as a blanket for insulating furnaces, jet engines, etc.
- Tape for wrapping pipes and other parts requiring high temperature insulation.
- Fireproofing for safes and containers.
- Packing for expansion joints, kiln cars, etc.
- As a paper, fire curtain, or bonded into a fire wall.

REINFORCING AGENT

- To reinforce electrical insulators, battery plates, etc.
- As a base for sprayed-on ceramic coatings.
- With resins to produce fiber-plastic materials.
- With deposited metals to make porous structures.
- In brake linings.

AS A FILTER

- To filter gases (can be burned clean and reused).
- Filtration of liquids (oils, acids, etc.).
- Flame filter to remove ash (as in gas turbine).

MISCELLANEOUS

- As a wick or other capillary body.
- Cushioning or vibration dampening material.
- Bonded into acoustical tiles.
- As a diffusing material (high corrosion resistance).
- As a catalyst support.
- For dielectric materials.

This listing does not represent all possible uses. These are simply suggested applications, many of which are omitted.

versatile ceramic fiber — insulates, makes superfine filter, resists 2300°F (and more)

This cotton-like material is a ceramic fiber, a new synthetic with a host of interesting possibilities. Brand new, this remarkable fiber (trademarked FIBERFRAX) easily withstands 2300 F without loss of properties, and up to 3000 F without melting — temperatures far higher than possible with existing mineral or glass fibers. Applications already tested range from — use as a superfine filter (even fine enough to filter bacteria) — to insulating blankets for combustion and exhaust systems of jet engines — to dielectric papers (with electrical losses 1/4 those of Kraft paper).

FIBERFRAX fiber is made by melting aluminum oxide and silica (both non-critical materials) at 3300 F. The molten mix is then poured and blasted with an air jet. Instantly, a mass of fluffy white fibers is formed. These fibers are as long as 3", yet average only 4 microns in diameter (about 1/25 the diameter of a human hair). Weight, as blown, is just 2 lbs per cu ft.

This random mass of fibers has many talents. Experimentally, it has been bonded into batts, made into felted rolls or blankets, and even made in paperlike forms (such as tape). When packed to density of about 6 lbs per cu ft, it can make a

better heat insulator for many furnaces than high grade insulating brick. Because of its pronounced capillary qualities, it seems suitable for use as a wick. FIBERFRAX fiber is also virtually impervious to most acids. It could be used as a catalyst carrier. And it seems a natural substitute for asbestos — or it could be combined with this rather critical material.

Inherently an excellent electrical insulator, FIBERFRAX fiber will find many dielectric applications. It also lends itself to use as a reinforcing agent — for example, in battery plates, or in low pressure laminates, or perhaps as a base for sprayed on ceramics. It is resilient and makes a good cushioning or packing material, particularly for high temperature spots. It could be used for fire proofing, or bonded into a firewall. FIBERFRAX tiles also deaden sounds. In bulk or paper form it makes an unparalleled filter for gases, liquids, flames, etc.

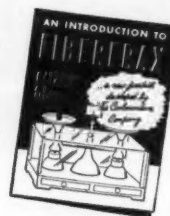
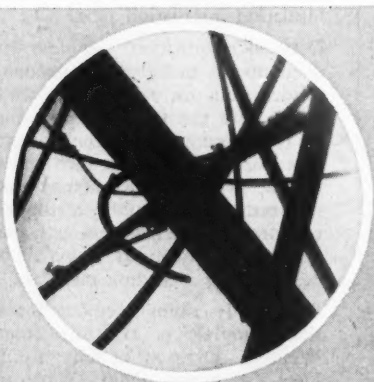
Do any of these applications suggest possibilities to you? If so, please write or phone us. Though FIBERFRAX fiber is presently available only in bulk form, all the forms mentioned here (and perhaps others) will soon be commercially available. Why not check up now?

CARBORUNDUM

Trade Mark

"Carborundum" and "Fiberfrax" are trademarks which indicate manufacture by The Carborundum Company

FIBERFRAX material magnified 500 times. Note the diverse size and random arrangement of fibers (ideal properties for a filter material).



FOR COMPLETE INFORMATION — USE THIS COUPON—

Dept. 5-122, Refractories Division
The Carborundum Co., Perth Amboy, N. J.

Please send free folder on FIBERFRAX fiber.

Name _____

Position _____ Company _____

Street _____

City _____ Zone _____ State _____

When inquiring check CP 6572 on handy form, pgs. 2-3

Develop source of constant light ...

useful for calibrating instruments containing phototubes, for self-luminescent materials

Tritium, a product of the Oak Ridge atomic reactor, is being used by two Boston scientists to make a substantially constant light source. A quantity of radioactive tritium is incorporated into stilbene, a crystalline substance, and processed chemically to form a solid crystal. The tritium constantly gives off beta rays which will cause the stilbene to fluoresce. The crystals yield almost constant luminosity and yet have essentially no health hazards.

Although light from the tritiated stilbene is visible to the eye, the maximum light output is strongest in the region where the eye is least sensitive and where all phototubes are most sensitive. The new source, therefore, will be very useful for calibrating instruments containing phototubes which have to be standardized periodically. They will also be of value to astronomers and other scientists who need a constant light source for use in optical research.

The brightness is reported to diminish at the rate of only about 5% each year. It is expected that they will retain over 50% of their light output even after 10 years of use. Radium-activated sources now used lose half their light in about 3-6 months.

Work is in progress on the preparation of other non-hazardous, tritiated, self-luminescent materials which will be far more visible to the human eye. These materials will be useful for luminous makers, watch dials, and many other applications for which hazardous radium-activated substances are now in common use.

(Scientists who developed the process are Dr. Irving A. Bernstein and Earle Farmer, Tracerlab Inc., Dept. CP, 130 High Street, Boston 10, Mass.)

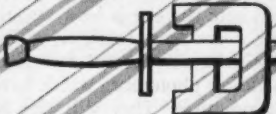
Meters simplify flow cost accounting problems

Evenly graduated flow meters with electronic integration are available for metering steam, air, water, oil, and gas from the standpoint of both total flow and final distribution. With such a system in use, costs may be computed exactly and maximum operating economies may be effected.

Complete specifications, operating information, accessory equipment data, and references to other types of flow meters are included in 26-page bulletin. Photos and diagrams illustrate and explain features and advantages of equipment. Simplified electronic integrator, bell and meter body construction, electrical transmission of flow measurement, remote recorders and integrators, electric meter body specifications, and design features are among the numerous subjects covered in detail.

Cat 2300 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6573 on handy form, pages 2 and 3.

*Specialists
in stainless tubing
and pipe...*



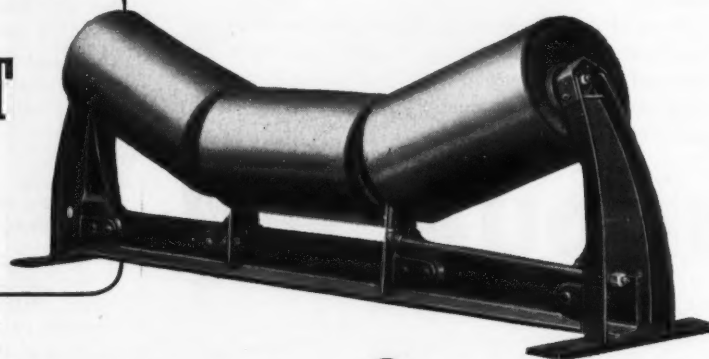
AMASCUS TUBE COMPANY
STAINLESS STEEL TUBING AND PIPE
GREENVILLE, PENNSYLVANIA

SALES REPRESENTATIVES

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SAN FRANCISCO, R. E. SCHLENDORF CO.	

When inquiring check CP 6574 on handy form, pgs. 2-3

LINK-BELT IDLERS



...cut your handling costs **3** ways



Concentric counterbored and journaled full-length central tube and counterbored roll shell are continuously welded to dished heads to maintain balance and bearing alignment.

Precision roller bearings maintain alignment.

Large grease reservoir prolongs lubrication intervals.

Grease-in-dirt-out, cartridge type unit seal preserves lubricant. No springs, no loose parts, no sliding metal-to-metal contact.

Yes, you save money three ways when you specify Link-Belt Roller Bearing Idlers—

(1) Reduced maintenance, thanks to better lubricant retention and longer-lasting adjustment.

(2) Less "down-time," thanks to husky, self-aligning roller bearings and efficient sealing.

(3) Lower power requirements, thanks to smooth anti-friction action.

And by standardizing its design, Link-Belt gives you the famous chip-handling 45° Idler at a cost lower than you'd expect. You can choose from the full Link-Belt line of standard and heavy-duty 20° troughing, impact-cushioning, belt training and flat belt idlers in a wide range of roll diameters and belt widths.

LINK-BELT
ROLLER BEARING IDLERS

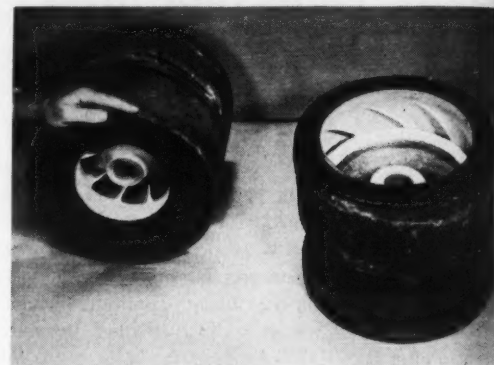
LINK-BELT COMPANY
Chicago 9, Indianapolis 6,
Philadelphia 40, Atlanta, Hous-
ton 1, Minneapolis 5, San Fran-
cisco 24, Los Angeles 33, Seattle
4, Toronto 8, Springs (South
Africa). Offices, Factory Branch
Stores and Distributors in
Principal Cities. 12,540-A

When inquiring check CP 6575 on handy form, pgs. 2-3

IDEAS

Resistance to water flow reduced by use of porcelain enamel on pump housing

Housing of a pump used to draw water from extreme depths is coated with porcelain enamel to reduce friction to a minimum. This glass-like surface covers area where water is forced upward. As this is the greatest area of friction, coating was specified to give



Views of deep well pump housing with porcelain enamel coating on interior

water the fastest possible flow. At same time cast iron metal housing is protected against rust, corrosion, and deterioration.

Each housing of the multi-stage pump has the coating. It has been applied evenly, in a single operation, over the circular walls as well as the tapered fins. Similar smooth surface coatings have also been used to advantage for like applications on handling chutes and conveyors.

(Product of Barrows Porcelain Enamel Co., Dept. CP, Cincinnati, Ohio . . . or for more information check CP 6576 on handy form, pages 2 and 3.)

Tells how to reduce cost of installing insulation

Information on cost-reducing methods of installing all types of insulation material is combined with general information on special method and equipment in 35-page booklet. Sheet lists factors that should be given consideration when figuring insulation installation jobs.

Detailed information, complete with pictures and diagrams, is included on various types of end-welded studs for use with various types of insulation. Stud fasteners and insulation are classified by types and uses for convenience. Application procedures are given for each type of stud fastener for use in four basic material groups. Complete information is given on methods for supporting reinforcing materials used with guniting, and two examples are included showing how guniting can be used over insulation materials.

Bulletin describing methods for securing insulation materials is available from Nelson Stud Welding, Division of Gregory Industries, Inc., Dept. CP, Lorain, Ohio. When inquiring specify CP 6577 on handy form, pages 2 and 3.

**Ion exchangers used
in decontamination
of plating solns . . .**

demineralize bath, rinse solns,
recover metals from solns

Ion exchange, a process with a number of familiar applications in many fields, has been adopted by electroplaters as an unit operation. Removal of impurities from plating solutions, decontamination of rinse waters, and the recovery of valuable metals have been facilitated by the use of ion exchangers.

Since plating solutions in use become contaminated with impurities, which either reduce electrical efficiency, or cause brittle spotty or dull deposits, an efficient method for the removal of these materials would be desirable to the plater. Ion exchangers are used to overcome such problems in hard chromium plating by removing metallic cations from chromic acid plating solutions. For this purpose, a high capacity cation exchanger, resistant to oxidation in chromic acid, is used.

In order to eliminate mineral impurities which enter the bath with water used to make up the solution and also to compensate for evaporation and drag-out losses, installations of ion exchangers have been made.

The efficiency of rinse waters may be increased by removal of mineral impurities. In addition, this treatment renders the waters non-toxic and recovers small quantities of valuable metals for re-use.

(Information courtesy of The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N. Y. . . . or for more information check CP 6578 on handy form, pages 2 & 3.)

CORRECTION NOTICE

On page 194 of the October issue of **CHEMICAL PROCESSING** we reported the development of a flexible coupling used to join piping of various grades. We failed to specify that coupling may be used to join glass-lined steel to Pyrex piping, which is a product of Corning Glass Works, Corning, New York.

For more information on product advertised at right, specify CP 6579 . . . see information request blank between pages 2-3.

FROM FIRST COST TO LAST

LESS PACKAGING EXPENSE

WITH
CHEM-PAK

**DEPENDABLE SIFT-PROOF PAPER BAGS
SPECIALLY ADAPTED FOR SHELF-UNIT
PACKAGING OF CHEMICAL PRODUCTS**

**CHEM-PAK
BAG TYPES FOR MANY NEEDS**



Heavy-duty construction, wax-treated or asphalted paper when desirable. Paper combinations to protect against moisture, odor, grease, vapor, etc. Excellent printing characteristics. Cut so waste can't ooze. Protective "shingle" construction; no open area through which contents can sift.

**CHEM-PAK
STANDARD**

Made with the original and justly famous Union sift-proof feature.



Thermoplastic applied to inside top portion of bag. Closure can be made on standard heat-sealing equipment. Paper combinations to suit the individual protective qualities desired. Excellent printing surface for shelf display packages. Bottom has famous Union sift-proof "shingle" construction.

**CHEM-PAK
UNISEAL**

Standard CHEM-PAK with a thermoplastic application to effect a heat sealed closure.



Can be closed on standard heat-sealing equipment. Heat-sealing top guarantees a sift-proof closure. Unithene, chemically inert lining for packing Class "B" poisons, corrosive and hygroscopic chemicals. Bottom squares out flat for easier packaging, better shelf display. Bottom both heat sealed and adhesive reinforced.

**CHEM-PAK
UNITHENE***

Special Duplex paper combination. Inner ply — Unithene.*

*UNITHENE—Union high-test kraft with control-coated polyethylene.

VERSATILE CHEM-PAK bags are certified sift-proof. They meet requirements of the Interstate Commerce Commission — are safe even for Class "B" poisons. You'll find them an excellent solution for most packaging problems where dry chemicals are put up in units of twenty-five lbs. or less.

CHEM-PAKS are made in a wide range of paper combinations and closures, suitable for almost any dry chemical sold in small retail units. Their protective qualities compare favorably with more expensive containers. They are easy to handle, inexpensive to pack and ship, colorfully suited to retail display.

Measure your present package against CHEM-PAK. You can make a quick, accurate appraisal with Union's new Chemical Package Evaluator. This handy guide is yours for the asking. The coupon brings it.



NEW! Mail this coupon for practical **CHEMICAL PACKAGE EVALUATOR**. No charge or obligation.

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Woolworth Building, New York 7 CP 1252
Please send me the new Chemical Package Evaluator.

Name _____ Title _____
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CHEM-PAK

SIFT-PROOF PAPER BAGS FOR CHEMICAL PRODUCTS

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CHEM-PAK BAGS FOR FERTILIZERS—INSECTICIDES, FUNGICIDES, DUSTING POWDERS—PLANT FOODS—WALL SIZE—PASTE FLOUR—PATCHING PLASTER—PREPARED CEMENT—PLASTER OF PARIS—PHARMACEUTICAL CHEMICALS—DYES AND PIGMENTS—SANITARY CHEMICALS—POWDER SHAMPOOS—CHLORINE COMPOUNDS AND ALKALIDES—CAULKING, SEALING, WHITING AND FILLING COMPOUNDS—AND OTHER DRY CHEMICALS WITH COMPARABLE PACKAGING REQUIREMENTS

SOLVENTS from O&C

TOLUOL

BENZOL

XYLOL

NAPHTHAS

Petroleum Specialties



In considering a dependable source of supply for solvents, it's important to know where they come from.

O&C's recently built plant in Galena Park (Houston) Texas is strategically located in the heart of the growing Southwest. Deliveries by tanker, tank car or tank truck are rapidly and economically made to all parts of the country.

Facilities available for custom made cuts, specification products and private formulae.



OIL & CHEMICAL PRODUCTS INC.

NEW YORK: 295 Madison Avenue • HOUSTON: City National Bank Bldg.

Wholesale and Importers of
Industrial Chemicals

Petroleum and Aromatic
Solvent Refiners

When inquiring check CP 6580 on handy form, pgs. 2-3

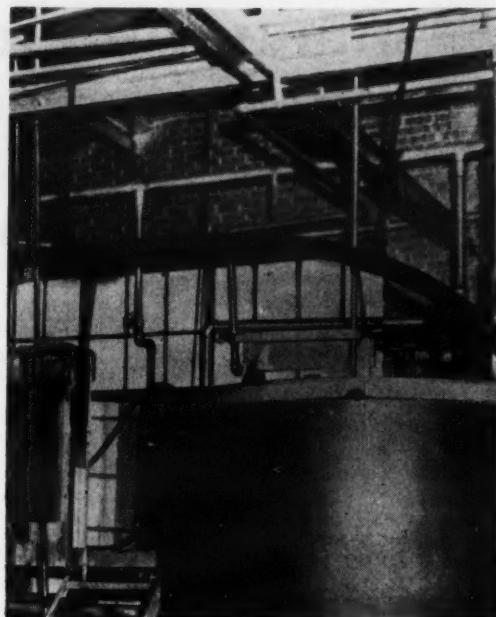
IDEAS

**Properties of plastic pipe
make it a real contender
with metal . . .**

suitable to many jobs because of flexibility, corrosion resistance, ability to stand vibration

Flexible polyethylene pipe reduces installation costs and provides answers to many operational problems. Though light in weight, it is tough and durable. In electrical applications, its superior electrical properties are important. And its ability to stand up to corrosion is important also.

Installing plastic pipe is easy because of light weight. Furthermore, it is extruded in lengths up to 400 feet (depending on diameter) so that many



Polyethylene pipe used in chemical process

pipe-fitting jobs can be eliminated. Pipe curves to fit uneven surfaces and structural plans and can be bent cold. It can be anchored by stapling to framework.

When used for insulated raceways, or conduit, one minor advantage is the ease of pulling wires through. This is because of smooth inner surface. Plastic will stand 500 volts per mil — has stood up to 20,000-volt breakdown tests.

Resistance to acids, alkalis, and most chemicals makes pipe a ready solution to chemical corrosion where temperatures do not exceed 140°F. Wet and sloppy areas may profit from use of polyethylene pipe, too, since it cannot rust or rot.

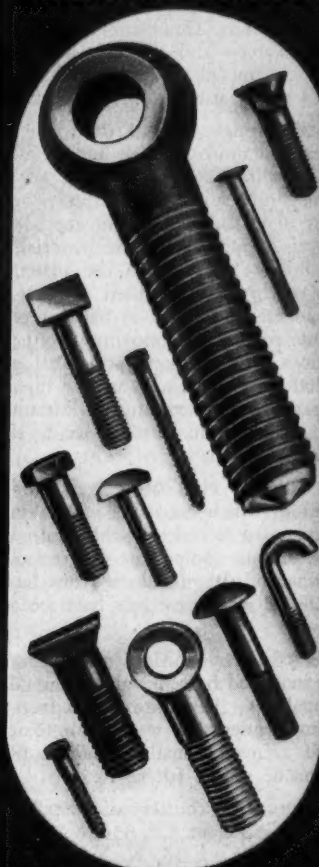
Another result of pipe's flexibility is the fact that it absorbs vibration which could set up bad stresses in metal pipe. This, together with its resistance to soil corrosion, makes it adaptable for underground piping and conduit.

(Information supplied by Bakelite Company, Div. of Union Carbide and Carbon Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y.)

THREADED SPECIALTIES

EYE BOLTS

by an
exclusive method



Among Pawtucket's many specialty products, these lower-cost eye bolts or "swing" bolts are the leaders in this field. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.

Pawtucket eye bolts are made in standard sizes 1/2" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit.

BETTER BOLTS SINCE 1882

PAWTUCKET

"THE BOLT MAN"

MANUFACTURING COMPANY

327 Pine Street - Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

When inquiring check CP 6581
on handy form, pgs. 2-3

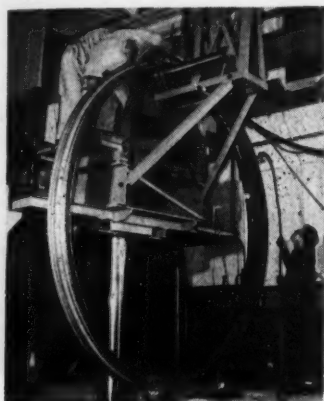
CHEMICAL PROCESSING

Fabricate largest turbine expansion joints . . .

special metalworking methods used for 10' diam units

Expansion joints which are believed to be the largest ever built for a gas turbine power plant are being manufactured. Making the huge 10' diam joints involves many intricate metalworking techniques. Special automatic welders and machine tools have been designed.

The large metallic bellows are being used to accommodate thermal expansion in waste heat boilers and regenerators. Leakproof joint is



Hydraulic hoist facilitates welding of 10' diam bellows

formed by three convolutions of each joint which "give" when sections they connect expand or contract with temperature changes.

Convolutions are made of 0.140" thick Type 321 stainless steel. They are attached to standard carbon steel or low alloy steel weld ends. Units comply with ASME requirements for unfired pressure vessels.

Size of the 122" expansion joints is believed to be exceeded only by special joints built for large wind tunnels. Manufacturer has already completed 22 of the bellows, which are being built for American Locomotive Co. and Lummus Co. They incorporate them in General Electric 5000 hp stationary gas turbine power plants and booster stations.

(Manufactured by Solar Aircraft Co., Dept. CP, 2200 Pacific Highway, San Diego 12, Calif.)

For more information on product at right, specify CP 6582 . . . see information request blank between pages 2-3.

Special Treatment to Make a Tube Stand Up!



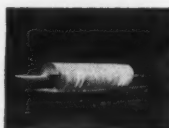
To make dependent pressure vessels and chemical process equipment
M. W. KELLOGG
pressure equipment

Be it for high pressure or high vacuum . . . 1800F. or -260F. . . corrosive or erosive service, exclusive manufacturing techniques lengthen the operating life of Kellogg heat exchange equipment.

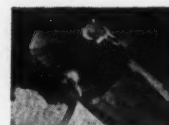
Pressure Vessels
Vacuum Vessels
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Heat Exchangers
Process Piping
Hi-pressure—Hi-temp
Power Piping
Bends and Headers
Forged and
Welded Fittings
Radial Brick Chimneys
Concrete Chimneys



Continuing Basic Study of heat exchange by Kellogg development groups over 20 years has produced unduplicated design data.



Extensive Shop Facilities, from plate forming to stud threading, permit complete fabrication of any type heat exchanger.



Shop Layout Craftsmen have had experience on all types of heat exchangers, from marine condensers to jet engine combustion chambers.



Special Shop Techniques—the component parts of each exchanger are fabricated as a production unit, building in the advantages of "tailor-made" fit.

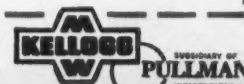


Rigid Quality Control is maintained by inspectors reporting directly to Shop Management rather than to Production executives.

FOR OPERATORS IN WESTERN CANADA

The Canadian Kellogg Company Ltd. has established complete shop facilities for the fabrication of all types of piping at EDMONTON, Alberta. Inquire directly or through any Kellogg or Canadian Kellogg office.

Fabricated Products Division, The M. W. Kellogg Company
New York, Jersey City, Los Angeles, Tulsa, Houston, Toronto, London, Paris



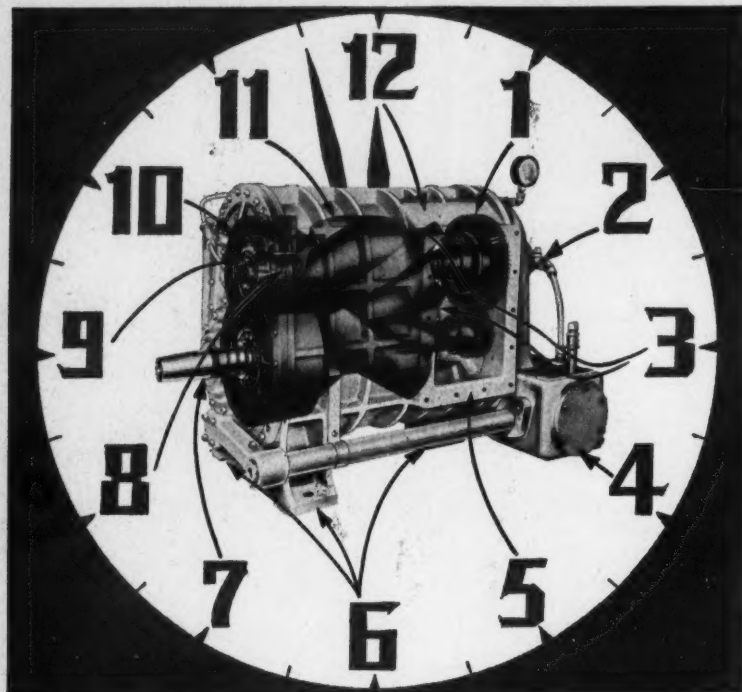
Design Features that make STANDARD AIRE Tick around the clock

1. Helical Gears of heat treated alloy steel hobbed and shaved to extreme accuracy for quiet operation.

2. Pressure Lubrication System provides positive lubrication to all bearings and gears.

3. Axial Air Flow . . . the smooth, gradual delivery of air minimizes shock and sound pulsations . . . it's different in theory and performance.

4. Oil Reservoir at the suction end of the blower helps to reduce oil temperature . . . holds adequate supply of oil.



5. Adapter Plates are furnished with one of a multiple of standard drillings for different pipe sizes.

6. Three-Point Mounting eliminates distortion of housing . . . facilitates application.

7. Tapered Drive Shaft for accurate and positive connection of coupling or pulley.

8. Non-Wearing, Non-Leaking, balanced pressure labyrinth seals assure clean air at all times.

9. Anti-Friction Bearings with special thrust provisions assure long life under desired load and speed requirements.

10. Self-Centering Bearing Carriers prevent housing warpage and fix the clearance between rotors and housing.

11. Rigid Shape Screw Type Rotors pull the air in gently and squeeze it out evenly and quietly . . . designed for maximum pressures.

12. One-Piece Housing for strength, accuracy and stability of dimensions.

These Standardaire Blower features, time-tested in varied applications, assure superior performance and dependable operation. For further data write

Read Standard Corporation, Dept. F 12
370 Lexington Ave., New York 17, N. Y.

BLOWER-STOKER DIVISION

READ STANDARD

CORPORATION

NEW YORK • YORK • LOS ANGELES

When inquiring check CP 6583 on handy form, pgs. 2-3



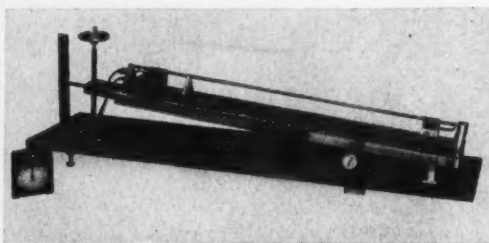
IDEAS

Furnishes reproducible data on many characteristics of paint, coatings . . .

finds tack, gelatin time, drying time, rate of drying and cure, and effects of grind

Speed with which a standard steel ball will roll over exactly one meter of paint or coating on smooth glass surface can be used to find tack, gelatin times of drying oils and high polymers, "consumer" drying time, rate of drying and curing, fineness of grind of dried films, and effect of immersion in water or other liquids at various stages of cure. Tester will determine some values which can be found in no other way.

An 11/16-inch steel ball is used to make the test. First, this is rolled over smooth, uncoated glass at a carefully predetermined angle. Resulting "blank" time is used to correct tests of the glass after coating.



Steel ball rolls down inclined surface coated with paint to be tested

Glass is then coated at desired thickness, and its angle from the horizontal is adjusted to anything between 7 minutes and 10.5°. Time of descent of ball is measured electrically to the nearest tenth of a second. As test progresses, time of descent is plotted against elapsed time (for drying of the paint).

Coating Analyzer can provide a wide range of performance data for both drying and non-drying film residues. It is reported to be the only method for determining gelation rates of oil base coatings.

(Coating Analyzer was developed by H. R. Moore Co., Dept. CP, 200 W. Montgomery Ave., Hatboro, Pennsylvania.)

Paper mill management taught at Maine

"Paper Mill Management" is the title of a new course being taught at the University of Maine this semester. It will deal with industrial methods of managing the various operating departments of a paper mill and the functions of these departments. Charles M. Howell, a full-time lecturer in the university's department of chemical engineering, will teach the course. Mr. Howell has spent 24 years with the Scott Paper Company, and has been consultant to the paper industry for four years.

Although the course is designed primarily for students of the five-year Management Option of pulp and paper technology, it is open to other students who are interested. (University of Maine, Dept. CP, Orono, Maine.)

HORTON TANK Serves Carolina Fertilizer Plant



THE 60,000-gallon Horton elevated tank shown above provides gravity water pressure for fire protection at Robertson Chemical Company's fertilizer plant near Statesville, N. C. It stores a reserve of water above the plant, ready to flow, without repumping, as soon as a hydrant is opened.

Horton ellipsoidal-bottom tanks are built in standard capacities from 15,000 to 500,000 gallons. Write our nearest office for information, estimates or quotations on tanks and steel plate work. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

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Boston 10	1007-201 Devonshire St.
Chicago 4	2116 McCormick Bldg.
Cleveland 15	2212 Guildhall Bldg.
Detroit 26	1535 Lafayette Bldg.
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Los Angeles 17	1536 General Petroleum Bldg.
New York 6	3314-165 Broadway Bldg.
Philadelphia 3	1650-1700 Walnut St. Bldg.
San Francisco 4	1545-200 Bush St.
Seattle 1	1307 Henry Bldg.
Tulsa 3	1649 Hunt Bldg.
Washington 6, D. C.	1158 Cofitz Bldg.

When inquiring check CP 6584 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Fluidized bed process
for ethylene oxide**

Pilot plant data indicate that ethylene oxide can be produced efficiently and economically on a commercial scale by a fluidized bed method. Process consists of direct oxidation of ethylene gas with air.

Fluidized bed is an agitated suspension of a fine catalyst solid in a rapidly moving gas stream. This contrasts with fixed bed processes which employ a catalyst in form of large particles which are not being agitated and mixed by gases.

In fluidized method, agitation serves to keep a uniform temperature throughout catalyst bed and prevents formation of "hot spots." Hence, better temperature control is permitted in reactor, resulting in uniformly high yields.

Fluidized bed process was developed from research initially undertaken by Atlantic Refining Company in Philadelphia. Vulcan Engineering Div. later took over process and at present are making plans for plants which will utilize the method.

(Announced by The Vulcan Copper & Supply Co., Dept. CP, 120 Sycamore St., Cincinnati, Ohio.)

**Graphic views show
manual controls**

Four-page bulletin contains numerous photos and cutaway views of manual controls designed for use in all-electronic control systems. Unit acts independently of recorder and controller, so that by setting the control in manual position either the recorder or controller or both may be removed from service.

Bulletin discusses features, description, operation instructions, applications, and installation of the units. Bul A-705 is issued by The Swartwout Co., Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 6585 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6586 . . . see information request blank between pages 2-3.

ALL FORGED STEEL

Edward INSTRUMENT VALVES

Lowest Cost Valves for Their Rating!



Standardize on Edward instrument valves—forged steel, yet their price is comparable to ordinary bar-stock valves.

Edward instrument valves are top-quality in every design detail—easy-grip T-handle . . . bronze yoke bushing . . . forged steel one-piece outside screw yoke . . . forged steel corrosion-resistant EVALized packing gland . . . EVALloy 13% chromium stainless steel stem-disk with needle point for close flow control . . . forged steel EVALized gland bolts that swing out of the way for easy repacking . . . heat resistant die molded EVALpak packing.

And look at this versatility—

★ **STEAM, WATER, OIL or GAS PRODUCT PROCESS LINES**

Edward instrument valves fit into any piping system. Globe or angle, sizes $\frac{1}{4}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1".

★ **HIGH TEMPERATURES or HIGH PRESSURES**

Rated up to 6000 lb at atmospheric temperatures, or up to 1500 lb at 1000 F.

★ **STANDARD or CORROSIVE SERVICE**

Available in carbon steel or 13% chromium bodies and trim.



★ **TYPICAL USES**

Orifice Meters	Regulators
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Get the full story on Edward instrument valves—the lowest cost valves for their rating. Write for Bulletin 491.

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Subsidiary of ROCKWELL MANUFACTURING COMPANY
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Dependability

Whenever you need reliable tubing, specify Weldco and be sure of getting the best. For Weldco is made by tubing specialists . . . men who have the equipment, facilities and experience to give you a product that's properly welded, carefully finished all the way through. For top-quality tubing, mechanically and metallurgically sound, you can always depend on Weldco.

Versatility

Youngstown Welding's plant facilities are geared to both large scale production and small quantities of odd-sized tubing. With this operating flexibility, we can produce a complete range of sizes—in the shortest possible time—to meet all your tubing needs. Weldco's versatility also gives you a choice of many different alloys—Stainless Steel, Monel, Inconel, Nickel, Cupro-Nickel, and Everdur, in sizes from 3 1/4" to 30" O. D.

Send today for complete information on this corrosion-resistant tubing, and remember . . .

Whatever Your Needs In Tubing . . . You're Way Ahead With WELDCO

THE YOUNGSTOWN WELDING & ENGINEERING CO.
3714 OAKWOOD AVE. YOUNGSTOWN 9, OHIO

When inquiring check CP 6587 on handy form, pgs. 2-3

IDEAS

Some policy problems to be met in development of civilian nuclear power . . .

an address by Eugene M. Zuckert tells need for AEC-industry cooperation on common problem

Speaking before the Chicago Section of the American Chemical Society on the occasion of their Atomic Energy Day, September 11, 1952, Mr. Eugene M. Zuckert, considered in part, the many aspects involved in the development of civilian nuclear power. Mr. Zuckert, a member of the Atomic Energy Commission, told the group that the Commission needs and solicits the help of industry in solving problems involved in lifting restrictions on private ownership of reactors and private acquisition of AEC patent rights.

Some of the questions bearing upon such deliberations which Mr. Zuckert enumerated follow:

1. Compatibility of civilian power and national defense.
 - a. Does development of atomic power collide with or is it consistent with the nation's needs for the common defense and security in the broadest sense? For example: Will developing civilian atomic power divert more fissionable material than prudent from military uses, that is, from use as bombs and as submarine and aircraft fuel? And: Can an atomic plant be built to contribute to both civilian and military objectives?
2. In the event that dual-purpose reactors (producing both plutonium and power) are built, the role of the Government in buying plutonium produced will have much to do with the success in turning out power at a reasonable cost.
 - a. Unless the Government buys plutonium at prices equivalent to its production costs, at this stage of the development the cost of generating power might be so prohibitive that no commercial firm would undertake such a project.
3. Location of private nuclear power plants.
 - a. Problem is to determine responsibility of the Government for establishing criteria governing the locating of privately-operated nuclear power plants, and to determine the methods of executing these responsibilities.
4. Government's responsibility for health and safety within privately-operated atomic plants.
 - a. What should be done by both the AEC and the plant operators to discharge the responsibilities that arise out of the lethal potentialities of radioactivity? There would be such practical problems as the type of insurance which private companies would need, both health and compensation, for the protection of themselves and their workers. Would private industry be able to devote as much attention to these problems as does the AEC?
5. Problem of security.
 - a. What arrangements could be established to assure adequate protection of private atomic

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SYSTEM

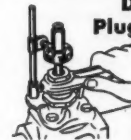


DELTA-DESCO SYSTEM an operator can lubricate 10 to 15 valves in the time usually required to lubricate one — and do the job better!

The DELTA-DESCO SYSTEM combines Delta Gun Fittings (or Automatic Lubricator), High Pressure Gun, Desco Specialized Lubricants, and Engineering Service. You stock only half as many DESCO Lubricants — 3 Standard and 1 Special — that's all you need.

Let us show you how to save 1/3 on YOUR plug valve maintenance.

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A simple, fool-proof device, automatically lubricates valve each time it is opened and closed. Ideal for frequently opened valves on loading platforms, manifolds, LPG lines.

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When inquiring check CP 6588
on handy form, pgs. 2-3

CHEMICAL PROCESSING

plants in the interest of the national security?

- b. What provisions can be made to assure that only loyal and reliable employees have access to secret work in private industry's atomic plants?

(United States Atomic Energy Commission, Washington 25, D.C.)

Trend toward castable refractories for lining industrial furnaces results in savings . . .

improved volume-stable refractory castables for temp to 3000°F is factor in rapid adoption

Significant savings result from increased use of castable refractories in place of fired refractory shapes for lining industrial furnaces used in processing steel, according to J. D. McCullough, chief engineer, Refractories Div., The Babcock & Wilcox Co. One factor in trend is availability of improved volume-stable refractory castables for temp up to 3000°F.

Other reasons for rapid adoption of castable materials are shortage of skilled masons and the reduction in inventory of special shapes. Expensive cutting and fitting of brickwork is eliminated, providing savings in time and cost of installation. Maintenance is also lower.

Castable refractory (often referred to as refractory concrete) is shipped dry, water is added at job site, and material is mixed and placed in a manner similar to structural concrete. High air dried strength is developed, which may increase with time, due to chemical reaction between water and binder. Exposure to heat is not necessary to attain high strength.

Castables can be poured or shot into place by suitable type of gun. If poured, they can be mixed by hand, or a cement mixer or mortar mixer may be employed. Availability of equipment and economic considerations should govern method.

A group of typical installations were made with a Kaolin base castable characterized by high alumina and low iron hydraulic binder. Binder proved to be unaffected by high sulfur fuel and reducing atmospheres. Installations included soaking pit covers and walls, high thermal head furnaces, burner blocks, and door linings. Among others are billet and slab heating furnaces, flat precast lintels over slot type openings, and nose arches.

Monolithic construction of soaking pit covers was tried in one mill and was successful in reducing maintenance. Use of castable refractories sped up installation from 1.3 to 6.5 square feet per man hour.

Soaking pit walls are a source of high maintenance in many plants. Bricks are gouged out or loosened by ingots striking walls or by heating and cooling cycles. Monolithic construction with castable refractories eliminates many of these weaknesses. Linings of furnaces with high thermal heads present a tedious problem of cutting and fitting of brick. This problem is solved through use of castables.

(Courtesy of The Babcock & Wilcox Co., Refractories Div., Dept. CP, 161 E. 42nd St., New York 17, New York.)

IMPORTANT ANNOUNCEMENT! FACTORY CAPACITY HAS BEEN DOUBLED! DELIVERIES ARE GETTING MUCH BETTER!

HAVEG is not a tank lining or coating. It is a solid, molded non-metallic material that the HAVEG CORPORATION fabricates to your specifications in its Marshallton, Delaware plant. Large size equipment can be molded in single pieces without seams or joints at low cost. Tanks can be made in one seamless piece as large as 10 feet in diameter by 12 feet in depth. HAVEG resists the corrosion effects of practically all acids, bases, and salts.

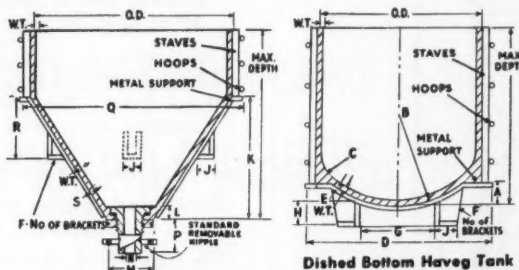
From TOPS Where tanks are vented to the atmosphere, four types of covers may be obtained. HAVEG can be machined and repaired readily so that pipe connections, manholes, changes to the system present no problem to the installation and maintenance crew.

HAVEG CYLINDRICAL TANKS CUT COSTS . . . RESIST CORROSION

Here are tanks with amazing long life, through and through resistance to corrosion! HAVEG cylindrical tanks have been successfully used for storage, pressure, pickling, and separating tanks, dye vats, crystallizers, surge tanks and stills. Consult your nearest HAVEG engineer now for technical advice, delivery, and price information. Specify HAVEG corrosion resistant equipment . . . tanks, towers, pipes, valves.

To BOTTOMS

Get the best bottom for the process with molded HAVEG. Sloping bottom tanks can be provided with outlets at any location. For more complete drainage, dished bottom tanks are available and when suspended solids are present, cone bottom tanks can be provided.



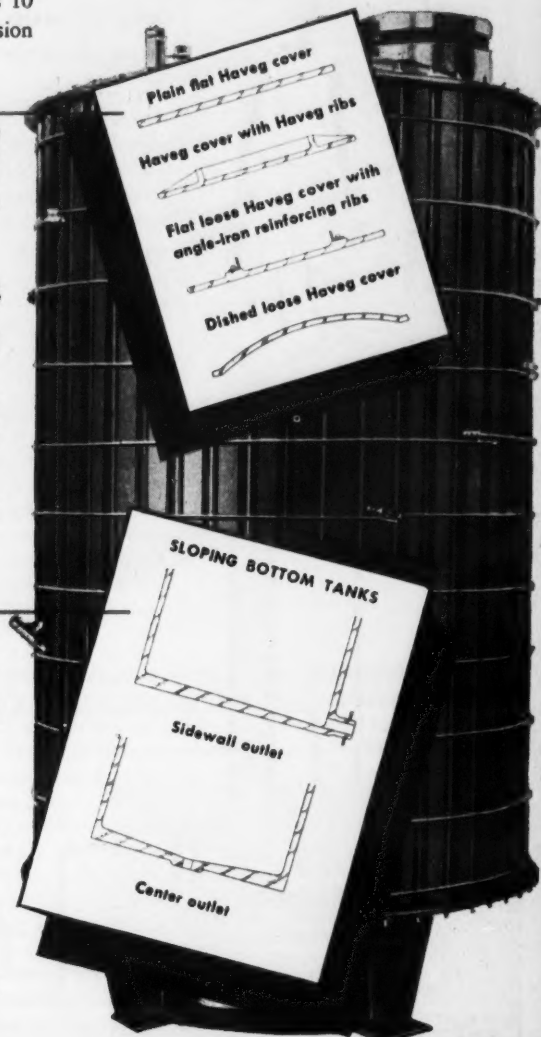
Cone Bottom Tank for applications requiring complete drainage.

Write Today for a complete 64-page, illustrated, technical bulletin on HAVEG corrosion resistant equipment. This Bulletin F-6 has chemical resistance tables for various HAVEG grades, tank sizes, installation and machining information. If you have a corrosion problem, HAVEG can help you.

Write Now!

TANKS

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When inquiring check CP 6589 on handy form, pgs. 2-3



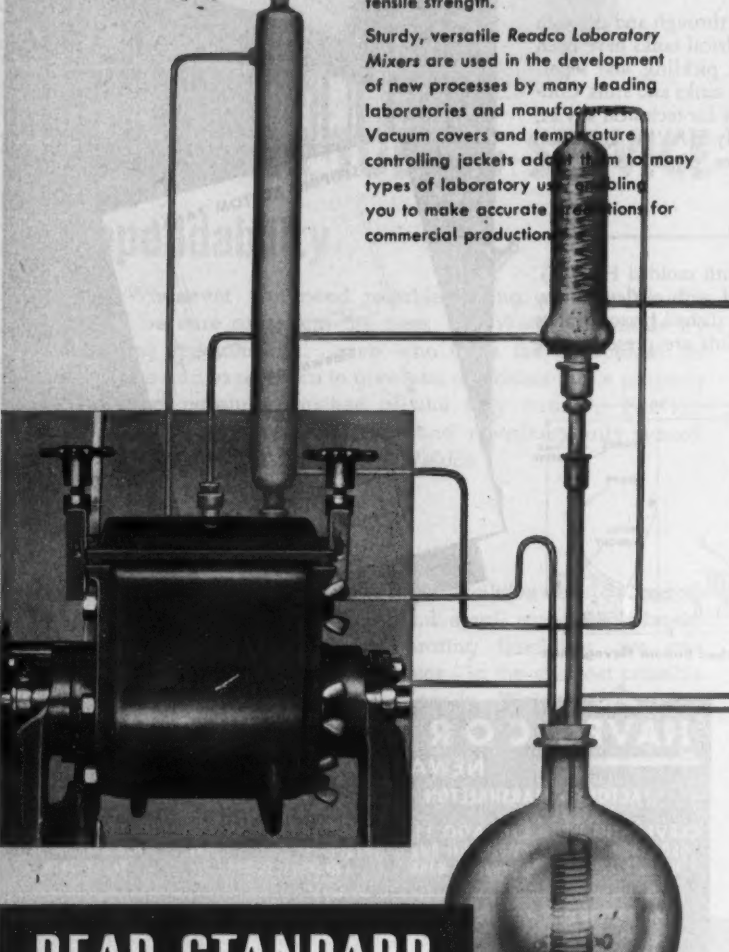
Readco Laboratory Mixer

speeds resin extraction from uncultivated rubbers

A rapid, efficient means of extracting resins from uncultivated rubbers has been developed by the National Bureau of Standards utilizing a Readco Laboratory Mixer.

National Bureau of Standards tests prove that mastication of rubber samples in the mixer during extraction greatly speeds production of vulcanizates having superior tensile strength.

Sturdy, versatile Readco Laboratory Mixers are used in the development of new processes by many leading laboratories and manufacturers. Vacuum covers and temperature controlling jackets add them to many types of laboratory use enabling you to make accurate reproductions for commercial production.



READ STANDARD CORPORATION

Beck Chemical Division:
York, Pennsylvania
Los Angeles, California

When inquiring check CP 6590 on handy form, pgs. 2-3

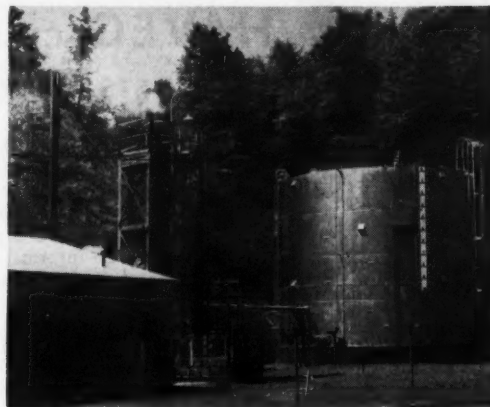
IDEAS

Recovering sulfur from waste gas arising from production of carbon disulfide . . .

J. T. Baker recovery unit will save the company about 1 1/4 million pounds of sulphur per year

A new unit is recovering sulfur from the waste gases of carbon disulfide manufacture at the Taylor Chemical Division of J. T. Baker Chemical Co. in Penn Yan, N. Y. It will recover about 1 1/4 million pounds of sulfur a year, all of which will be reused immediately in the electrothermal furnaces where carbon disulfide is produced by reaction of molten sulfur and lump charcoal.

The waste gases (principally hydrogen sulfide) are mixed with air under pressure and burned in a boiler.



Sulfur recovery unit in Penn Yan, N. Y. Large tank at right holds 10,000 cu ft of waste gases, consisting largely of hydrogen sulfide. Corrugated metal building houses boiler where the gases are burned. Scrubbing tower in center is where gaseous combination of sulfur and water is mixed with molten sulfur

The mixture is then passed over a catalyst bed, which converts to a hot, gaseous combination of sulfur and water. This combination then goes through a scrubbing tower where molten sulfur cools and absorbs the gaseous sulfur. The sulfur is then returned to the electrothermal furnaces.

(Information courtesy of J. T. Baker Chemical Co., Dept. CP, Phillipsburg, N. J.)

(See page 42 of November CHEMICAL PROCESSING for a feature article telling about recovery of a high purity flake sulfur from waste refinery gases.)

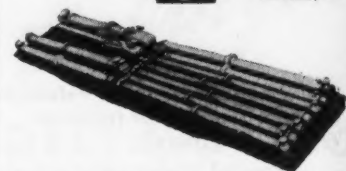
Expansion by synthetics producer includes esterification unit and molecular still . . .

increased facilities at Arnold, Hoffman & Company's Cincinnati plant improves customer service

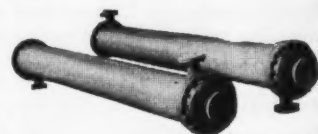
Molecular still and esterification unit are among important equipment additions to recently completed expansion of Arnold, Hoffman & Company at their Harkness & Cowing Div. plant in Cincinnati. Still was manufactured and installed by Distillation Products Industries, Div. of Eastman Kodak Company. Expansion has provided highly improved service for synthetic products customers.

THESE EXAMPLES OF VERSATILITY

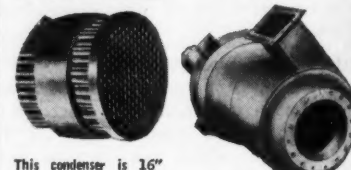
show that  can help YOU, too



One of six carloads of Heat Exchangers, Coolers, Condensers and Reboilers designed and fabricated by our Heat Transfer Division. Materials used consist mainly of type 304 Stainless Steel.

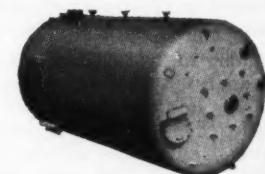


Two of four Steel Shell Condensers with Ampco 8 Heads and Tube Sheets. These condensers were built for export to the Middle East.



This condenser is 16" DIA. x 12' tube length; Bundle 3/4" O.D. type 316 Stainless tubes; Double tube sheet also of type 316 . . . manufactured by the Heat Transfer Division of DOWNTOWN.

One of two all-Aluminum units fabricated by DOWNTOWN IRON WORKS, INC. (Welding was performed by the Inert-Gas-Metal-Arc method.)



One of 4 Fermentors, 12'0" x 22'7" high tangent, 10% Stainless Clad, type 304 Stainless . . . manhole body and connections type 304 Stainless. Each fermenter equipped with coils of 3" O.D. x 14 ft. tubing . . . type 304 Stainless.

Correct Design—Right Materials

Useful literature yours for the asking!

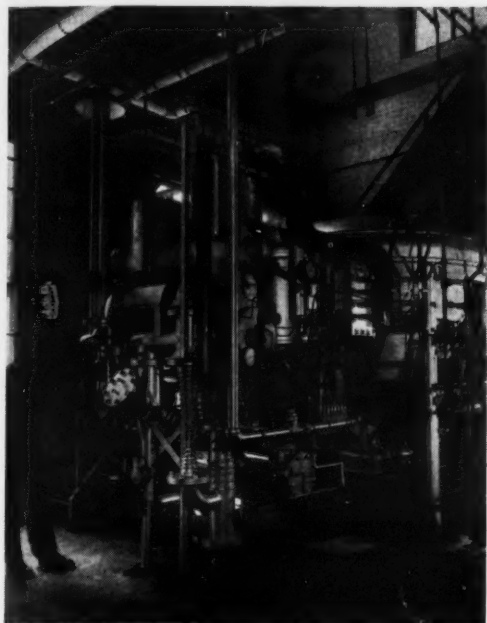


NEW YORK OFFICE 30 CHURCH STREET
DIVISION OF
PRESSED STEEL TANK CO.
MILWAUKEE-WIS.

When inquiring check CP 6591 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Synthetic products manufactured by Arnold, Hoffman include distilled esters, distilled oleic acid, Ahcovel line of substantive softeners and wetting agents. Expansion came as direct result of firm's earlier decision to move production of synthetic products adjacent to



Molecular still

manufacture of basic raw materials. Thus, Harkness & Cowing, originally acquired because of their prime position as producers of fatty acids, has become key plant in parent firm's synthetic products facilities.

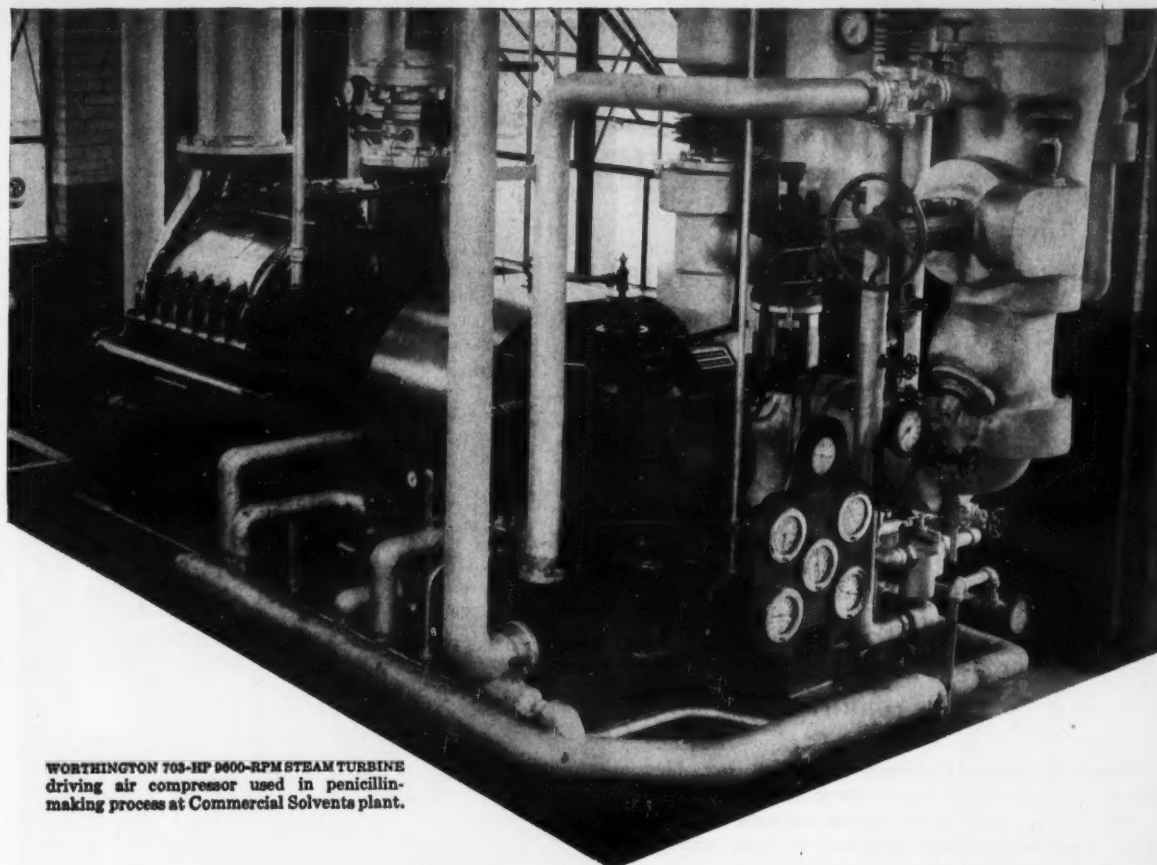
Firm's synthetic products facilities were formerly



Esterification unit

housed in their Dighton, Mass. plant. Active expansion of vat dyestuff operations at that location was another reason for moving synthetic products production to Cincinnati.

(Courtesy of Arnold, Hoffman & Company, Inc., Department CP, Canal & Waterman Street, Providence 1, Rhode Island.)



WORTHINGTON 705-HP 9600-RPM STEAM TURBINE driving air compressor used in penicillin-making process at Commercial Solvents plant.

9600-rpm turbine drives compressor in making penicillin for Commercial Solvents Corp.

Two years ago, a Worthington high-speed steam turbine was installed in the Terre Haute, Indiana, penicillin plant of Commercial Solvents Corporation. Its high efficiency and economical steam consumption plus its low maintenance demands have justified that selection many times over.

In addition, use of Worthington high-speed, direct-drive turbines to drive centrifugal compressors or blowers makes possible a broad speed range, elimination of costly speed increasing gears, and adaptability to various governing arrangements for precise control under all operating conditions. Worthington's design flexibility provides you with the *right* type and size turbine for optimum performance—regardless of your requirements.

Remember, when you're considering turbines for driving compressors, the engineering of the turbine is just as important as the engineering of the compressor. Worthington's long and complete experience in compressor-drive engineering is your assurance of maximum efficiency. Write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

T-2-19



SINGLE-STAGE
TURBINES

MULTI-STAGE
TURBINES

TURBINE-GENERATOR
SETS

FEED WATER
HEATERS

BOILER FEED
PUMPS

SURFACE
CONDENSERS

A GREAT TEAM IN STEAM

WORTHINGTON



Steam Turbines

When inquiring check CP 6592 on handy form, pgs. 2-3

Benzol Products Co. solves tough vacuum problem with Worthington Steam Jet Ejectors

*18 units installed since 1942
for operation under extremely
corrosive conditions*

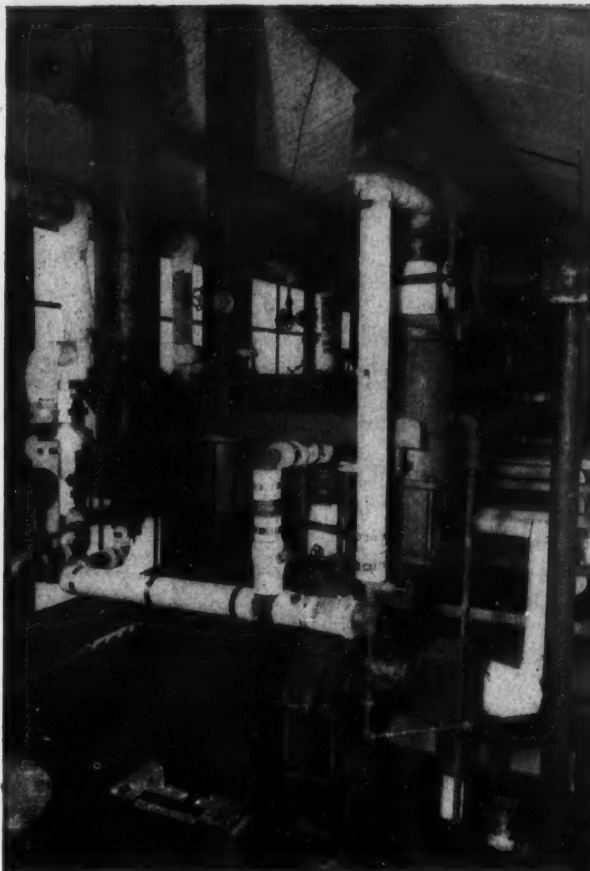
Benzol Products Company of Piscataway, New Jersey, had a real problem on their hands.

Until 1942, they were having extreme difficulty with maintenance and operation of their vacuum pumps due to the highly corrosive vapors resulting from their processes. In 1942, they replaced a vacuum pump with a Worthington corrosive resistant ejector, and it was so successful that they have now replaced all of the vacuum pumps for corrosive service with ejectors. Some of the units installed in 1942 and 1943 are still equipped with their original nozzles and diffusers—in spite of 24 hour-a-day, 6-day-a-week operation.

Corrosion—the one big problem—has been eliminated by the material from which these particular ejectors are made—impervious graphite.

Worthington's experience with ejectors dates back to 1918. And today, there's a Worthington model for every vacuum requirement—from atmosphere to 50 microns absolute, single and multiple stages, condensing and non-condensing, of stainless, bronze, porcelain, impervious graphite, Worthite, cast iron and steel.

Write and tell us about your specific requirements. Worthington Corporation, Steam Power Division, Ejector Section, Harrison, New Jersey.

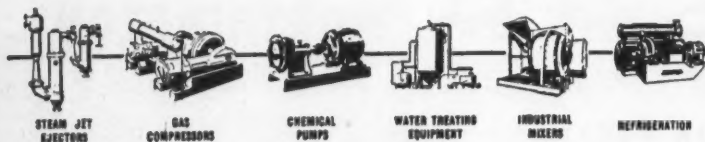


WORTHINGTON STEAM JET EJECTOR MADE OF IMPERVIOUS GRAPHITE for corrosion resistance. Installation at Benzol Products Company plant in Piscataway, New Jersey, used on vacuum service in production of synthetic allethrin. This three-stage unit operates at 2 mm Hg absolute.

6 Big Advantages of Steam Jet Ejectors for Vacuum Service.

1. Initial cost is low.
2. Operating costs are at a minimum.
3. Maintenance costs are negligible.
4. There are no moving parts.
5. Easy to operate.
6. They can be manufactured of any machinable material.

X.2.1



WORTHINGTON
Steam Jet Ejectors

When inquiring check CP 6593 on handy form, pgs. 2-3

IDEAS

Reviews some basic problems in power generation with nuclear reactors . . .

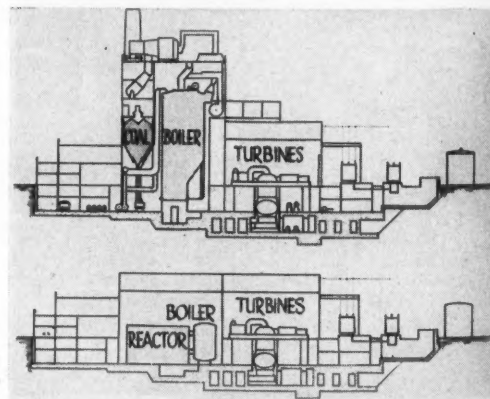
W. H. Zinn of Argonne National Laboratory sets forth economics of atomic power

Various evidence exists for people to assume that central-station electrical power derived from nuclear reactors is virtually here. For example, propulsion of submarines and airplanes by engines powered with nuclear energy are current projects of the Atomic Energy Commission and Defense Department. Also, numerous estimates have been published of the relative amounts of energy potentially available in minable uranium and in coal, usually with the conclusion that uranium is a major potential source of energy.

Thus, the argument can go that if propulsion units for submarines are being built, why cannot larger reactors of the same design or even a number of them together be used as central-station electrical power sources? Fact is that they can be so used, but this is improbable because of economic considerations. What is practical, and what can be afforded for a highly specialized military use, may be much too expensive to compete with conventional sources of electrical power.

The central difficulty is the estimated high cost figure for various possible types of central-station nuclear power plants. There are some plus signs to the picture but not enough to offset the apparent large capital investment which would be required. Exemplifying the plus sign of the ledger is that the nuclear reactor theoretically replaces only a part of the steam generating plant and affects not at all the electrical distribution system. An accompanying photo illustrates the part which might be replaced.

At the top is a schematic diagram of a large coal-burning steam-electric installation. The coal hopper and the steam boiler would be removed and replaced



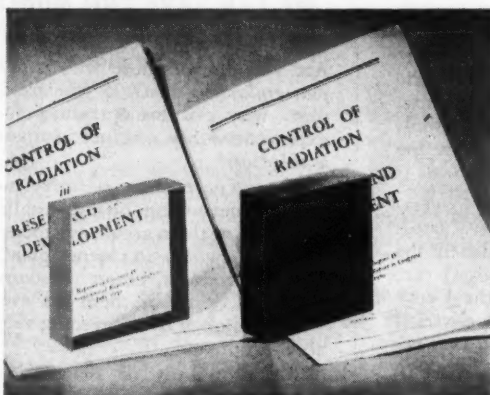
by a nuclear reactor and a different kind of steam boiler. Below for illustration, to the same scale, the Brookhaven reactor, which has the largest dimensions of any reactor for which dimensions have been released, is shown as well as the necessary steam boiler. Physically, there is no reason to suppose that the reactor will bring about any appreciable change in the size of the generating station.

However, in estimating construction costs of 200,000 kilowatt capacity installations we find figures like these: \$65,600,000 and \$80,800,000. The first is for a type of nuclear steam electric plant in which there is conversion of the nuclear fuel to either plutonium or U-233. The second figure is for a "breeder-type" reactor installation.

No amount of paper analysis, however, can substitute for actual experience or remove the economic question mark.

Technically, the problems are not as imposing. There never has been, nor is there now, any dearth of designs of reactors which are feasible as producers of electrical power. In addition it has been the case that troublesome technical problems are being solved rather more quickly than new ones are being discovered. Of the technical problems that do exist, there are four principal ones:

- 1) Choice of heat-transfer systems including the choice of media for carrying heat generated by the fission process in the reactor to a turbo-generator unit. Temperatures required within the reactor which permit issuing coolant to generate fair quality steam are not phenomenally high. Feasible reactor coolants for this application are gas, water under pressure, and liquid metals.
- 2) Choice of materials of construction and their stability under the conditions of intense irradiation inside a nuclear reactor. (Accompanying photo illustrates one type of radiation damage.)



An example of radiation damage. This shows two pieces of glass which originally were equally clear and transparent. They were placed side by side on the outside edge of a research reactor and after a few hours of irradiation, one is blackened and practically opaque while the other is untouched.

A few years ago all glass so exposed became blackened but research carried out at Argonne in conjunction with glass companies has found ways of eliminating this susceptibility to radiation damage.

For many reactors, substances such as beryllium, graphite, or zirconium are used. These, in conjunction with unconventional coolants like liquid metals, require extensive research especially in the subject of corrosion.

(Continued on next page)

Do you know how many jobs this vertical turbine pump can do?

We don't—but we'd like to! We've got an idea there are lots more than you might think.

Let's first take a look at the four inherent characteristics of vertical turbine pumps that make them the versatile units they are.

1. THE DRIVE UNIT IS REMOTE AND SEPARATE FROM PUMPING ELEMENT. The pump always operates submerged. No priming. No expensive dry pits, no suction or NPSH problems.

2. SPACE REQUIREMENTS AT A MINIMUM. Because of its vertical design, the vertical turbine pump takes less floor space than other types.

3. MECHANICAL AND HYDRAULIC FLEXIBILITY. Will operate with any type of drive. Discharge can be positioned to user requirements.

Can be close coupled or several hundred feet long. Meets head and capacity requirements by varying the number of duplicate stages.

4. IT'S A SIMPLE MACHINE. Uni-directional thrust minimizes alignment problems. Easy maintenance, few moving parts, little friction, long life.

Have you thought of a vertical turbine pump for your application? We'd like to hear from you, send you full information on Worthington vertical turbine pumps—newest and broadest line of its kind, built by the *oldest* manufacturer of pumping equipment.

Worthington Corporation, Vertical Turbine Pump Division, Denver 16, Colo.; Succasunna, N.J.

CHECK WORTHINGTON AGAINST THE REST

Only Worthington has all 8 vital design features as standard equipment.

The Ten Leading Makes Of Vertical Turbine Pumps Indicates Feature Is Standard									
Standard Features	Worthington	Pump A	Pump B	Pump C	Pump D	Pump E	Pump F	Pump G	Pump H
Seals above and below drain ports (oil-lubricated model)	✓								
Wearing rings	✓				✓			✓	
Enclosed impellers	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bronze bushings in bowl assembly	✓		✓	✓	✓	✓	✓	✓	✓
Flanged and bolted bowls on all sizes	✓					✓		✓	
Sand collars at both ends of bowl assembly (water-lubricated model)	✓								
Grease-packed bottom bearing	✓				✓				✓
Choice of oil or water lubrication	✓	✓	✓	✓	✓	✓	✓	✓	✓

The reasons why Worthington Vertical Turbine Pumps are out in front of competition.



CENTRIFUGAL



ROTARY



STEAM



POWER

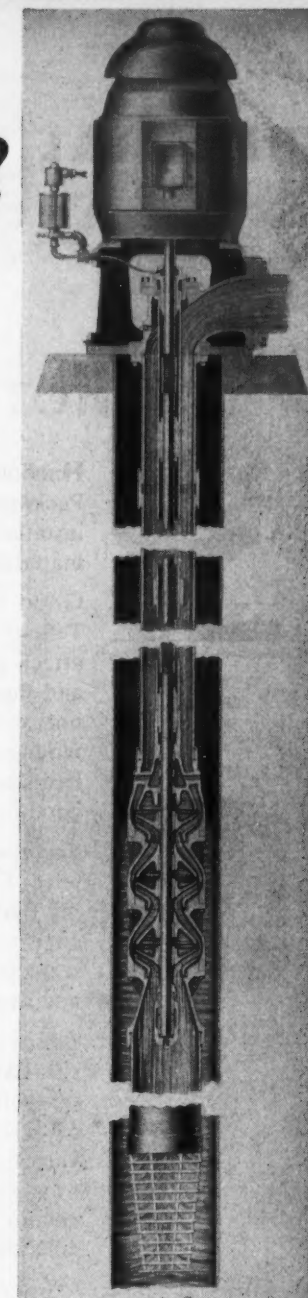


VERTICAL TURBINE

The World's Broadest Line Assures You The Right Pump For Every Job

WORTHINGTON

Vertical Turbine Pumps



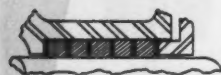
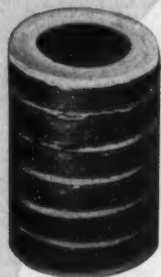
Typical section of the Worthington oil-lubricated vertical turbine pump that gives most efficient pumping performance at lowest possible cost.

D.1.10

When inquiring check CP 6594 on handy form, pgs. 2-3

CHEMISEAL PACKINGS

Give Months
Instead Of Hours
Of Service



NO. 711
CHEMISEAL
PACKING



NO. 620EG
CHEMISEAL
PACKING

Hundreds of reports say Chemiseal Packings are doing a good job on installations where other packing materials failed completely.

Good reason—they are made of Teflon* which resists all chemical attack excepting only molten sodium and fluorine. Chemiseal packing cannot contaminate the process. They require light gland pressure, permitting free shaft and spindle action, and are good from -110°F. to 500°F.

For rotating or reciprocating shafts, select Chemiseal Type 711—the packing that imposes least torque on the shaft and not only prevents axial seepage, but seals against stuffing box and shaft as well.

For emergency service, select Chemiseal Extruded Packing No. 620EG (graphite impregnated) or No. 620EM (with mica), applicable to valves, pumps, or any stuffing box application. Write for catalog or tell us your specific packing problems.

*DuPont's trademark
for its tetrafluoroethylene resin.

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GASKET
COMPANY**

**FLUOROCARBON
PRODUCTS DIVISION**
FABRICATORS OF "TEFLON", "KEL-F"
AND OTHER FLUOROCARBON PLASTICS
CAMDEN 1, NEW JERSEY



When inquiring check CP 6595 on handy form, pgs. 2-3

IDEAS

(Continued from preceding page)

- 3) Chemical processing of the irradiated fuels of the reactor. Primary purpose of this is to recover fissionable material in usable form. Also, it must remove and store the highly radioactive fission products. The goal here is to develop efficient and cheap processes.
- 4) Choice of plant location. So far reactors of large power, with the creation within them of large quantities of radioactive fission products, have all been located on extensive, government-owned reservations. Central-station nuclear power plants necessarily will create similar amounts of radioactivity, but it is doubtful that an acceptable solution is to locate each generating station on a similar large reservation.

(From "An Elementary Review of the Basic Problems in Central-Station Power Generation with Nuclear Reactors"* by W. H. Zinn, Director of Argonne National Laboratory, U.S. Atomic Energy Commission, P. O. Box 5207, Chicago 80, Illinois.)

*A lecture presented by Dr. Zinn to members of the Administrative Staff of the Laboratory.

60" constant-frequency cyclotron goes into operation at Argonne . . .

particles emerging from acceleration chamber are traveling at 28,000 miles/sec

The Nation's newest atom-smashing device, a 60" constant-frequency cyclotron, is now in operation at Argonne National Laboratory. The beam of electrically charged particles which emerges from the cyclotron's acceleration chamber is extremely intense, thereby making the cyclotron particularly well-adapted to the study of nuclear reactions and for the production of radioisotopes.

In operation, deuterium gas is fed into the acceleration chamber from which air has been evacuated. Here the gas particles are ionized. Immediately the particles (with a positive electrical charge) are pulled out of the ion source by one of the Dees* having a negative electrical charge. The electrical potential is then reversed. Changing of the potential occurs more than 22 million times/sec with consequent acceleration of the particles. When they emerge from the acceleration chamber the particles are traveling at 28,000 miles/sec — about 15% the speed of light.

The cyclotron's magnet is of standard "double-yoke" design and weighs about 280 tons; pole faces are 60" in diameter. Coils surrounding each of the poles weigh 13 tons each and are constructed from hollow extruded aluminum. More than 4 miles of the 3" wide and 1/2" thick aluminum "wire" are used in the 2 coils. In addition to conducting electricity, the "wire" serves to cool the coils. Water, under pressure, flows through the open space in the aluminum, and the heat it absorbs is removed at another point by a heat exchanger.

The cyclotron is installed in a vault having inside dimensions of 40 x 50'. Ceiling height is 28' in order to provide sufficient clearance for a bridge

SLY PIONEERS AND LEADERS IN DUST CONTROL



WE CAN SAVE YOU MONEY BY COLLECTING YOUR DUST

Are you one of those who is still just enduring dust? If you are in dust, why not let a trained and experienced Sly engineer suggest a solution?

In your particular industry we have numerous operating installations. All of them are saving money for their owners—in cleaner plants, cleaner products, better personnel relations. Some of them are even making money by recovering valuable products.

With thousands of installations throughout the past 50 years, we have a wealth of experience in all industries. It is an exceptional background of value to anyone with a dust problem.

Yet—Sly costs *no more* (sometimes less.) May we send Bulletin 98 and discuss your dust problem with you?



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When inquiring check CP 6596
on handy form, pgs. 2-3

CHEMICAL PROCESSING

crane of 10 ton capacity. Vault walls are 7' thick and are constructed of concrete.

Inasmuch as the cyclotron is operated by remote control and frequently will be in use for as much as 22 hours per day, it was necessary that most of the mechanical and electrical equipment be installed outside of the vault for maintenance availability. This required that a large number of electrical control leads, power cables, vacuum lines, and cooling water lines be brought into the vault. Supplying these utilities has been achieved by providing a full basement under the cyclotron vault. Services are connected to the cyclotron by properly located floor slots.

Observation of the cyclotron while in operation is possible by a special liquid-filled window in the concrete wall. Window is essentially a large glass tank, 7' thick, 4' long, and 3' high which is filled with zinc bromide solution. Glass used was developed at Argonne and, unlike ordinary glass, does not become dark upon exposure to radiation. (See the previous article, beginning on page 58.)

(Information courtesy of U. S. Atomic Energy Commission, Argonne National Laboratory, PO Box 5207, Chicago 80, Ill.)

*The Dee is so-named because it closely resembles the capital letter "D." Two Dees, looking like a hollow split pill box, are the parts of the acceleration chamber in which the ionized particles travel during the acceleration process.

National Research Council sets up standards for IR data . . .

system organizes data on infrared spectra for future speed and convenience

In order to avert what has been "the crisis of information," National Bureau of Standards has set up a data card standard for infrared spectra of organic compounds. Work is being done under sponsorship of National Research Council.

Eventually these data cards will be available in three styles: as edge-punched machine-sorted cards, as IBM cards, and as 8½ x 11" sheets. At present only edge-punched cards will be made. They can be sorted with an inexpensive machine, or by means of a knitting needle. Each compound card will be sortable according to four classifications: wave length, melting or boiling point, chemical function group, and number of carbon atoms. In addition, this card carries empirical and structural formulas, description of the particular sample on which data were taken, infrared spectrum, table of wave lengths of absorption maxima, and a complete bibliography of the compound. Two sides of the cards are used.

Also planned is a series to supplement these data cards. Data will be gathered at high resolution using specially purified compounds. Each card in this series will contain all physical and chemical data that can be obtained.

(Information from Technical Report 1676 of National Bureau of Standards, U. S. Dept. of Commerce, Washington 25, D. C.)

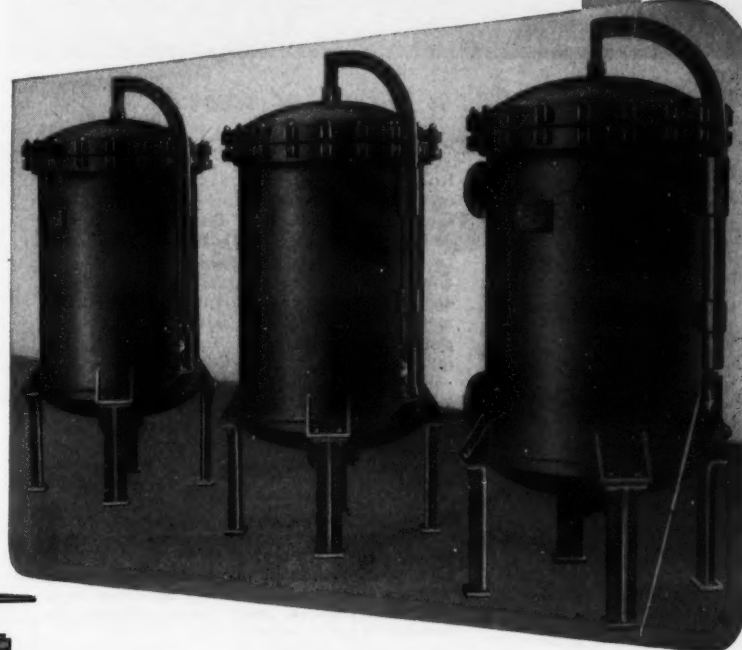
non-stop filtration

with **ADAMS PORO-STONE TEAM**

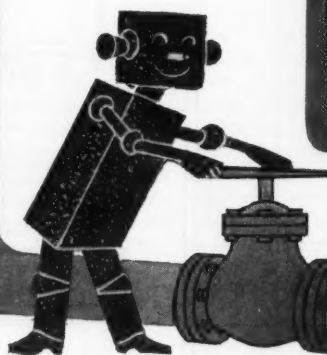
• Whether you choose the open filter aid precoat tank or the closed filter aid precoat system, the Adams Poro-Stone team takes your process liquids around the clock—week in and week out.

Complete package installations, ready to go on stream virtually at delivery, allow one filter to be drained, flushed clean, and precoat while the balance of the battery is in continuous service.

If cleaning or replacing clogged filter media stands in the way of making your process continuous, investigate Adams Poro-Stone CVF filters. They are available, with or without davit and swing bolts, in capacities and materials to suit most needs.



Bulletin 430 illustrates both manual and automatic operation.



Write

243 E. PARK DRIVE, BUFFALO 17, N. Y.

R. P. ADAMS CO., INC.

When inquiring check CP 6597 on handy form, pgs. 2-3

ROCKWELL Industrial METERS

Control Costs . . . Control Formulas



Measuring naphtha in pump room with Rockwell Model ER-12 meter

It's a matter of record!

FOR ALL LIQUID STOCKS, TRANSFERS



Model ER-13—1" connections, with small reset register.



Model ER-17—3" connections with non-reset register.

Rockwell meters provide indisputable records on the quantities of liquids used in batching, blending or processing. From them you can develop basic accounting facts for accurate cost identification—for day-to-day inventory controls. Too, metering at various stages affords an overall record of production efficiency. And metered batches means *no batches*. You get precise control over all liquids entering the formulation.

Rockwell meters fit into and save money anywhere liquids are handled. They are simple, durably constructed and precisely accurate. Mail the coupon or write fully about your measurement needs.



You Can RELY ON ROCKWELL

... to accurately measure most any liquid that can be piped—oils, chemicals, paints, liquors, solutions, etc. Complete list sent on request.

SEND THIS COUPON TODAY

ROCKWELL MANUFACTURING CO., PITTSBURGH 8, PA.

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Gentlemen:

I am interested in measuring _____

(Name of Liquid) _____

Pipe Size _____" Working Pressure _____ psi Temperature _____°F. max.

Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____

COMPANY _____

STREET _____

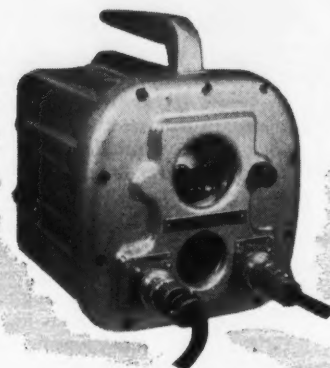
CITY _____

ZONE _____

STATE _____

When inquiring check CP 6598 on handy form, pgs. 2-3

Process Instrumentation



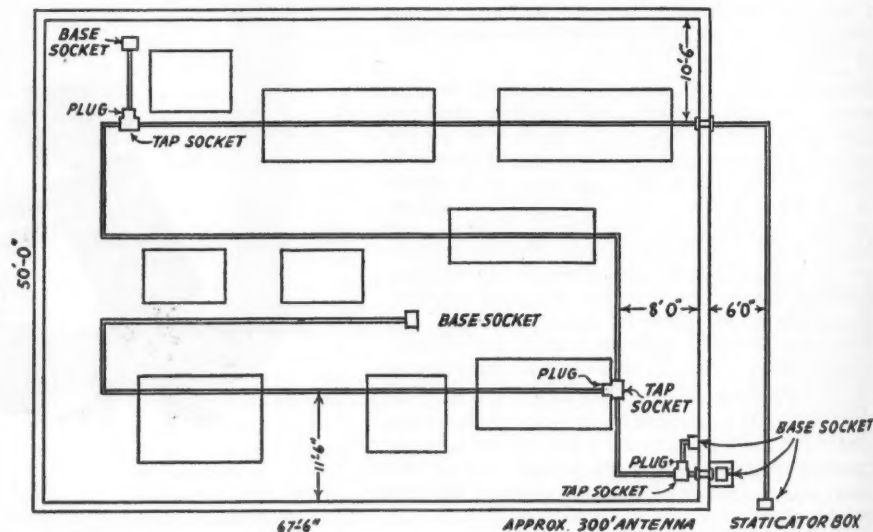
Warns workers and safety men whenever static shows up in powder plant

Warning system is fully automatic, can detect charges before they get to dangerous levels

PROBLEM: Knowing that smokeless powder and static charges produce a very temporary combination, safety engineers at the Naval Ammunition Depot in Crane, Indiana wanted more assurance than "safe practices" could give them. Even though they grounded machinery

and set up rigid regulations on clothing, they knew that static could reach dangerous levels without their knowledge.

Solution: In order to warn when machines developed dangerous static charges, or when workers entering the area brought in a static charge, safety engineers installed



Plan view of Bag Charge Filling Room at Naval Ammunition Depot shows how antenna was placed for remote warning system. Height of antenna above floor is 7'6"

a warning system. It was designed to produce both audible and visual warnings whenever static developed anywhere in the hazard area. System remains in operation 24 hours a day, and any warnings are given both in the immediate hazard area and in the office of the safety supervisor. Remote warning system also gives approximate location of the danger.

This warning system uses permanent automatic static indicators called Staticators. In addition to the instruments themselves, the alarms, and the remote warning arrangement, system contains pick-up wires or antennae which detect static.

Portable staticators are also available for pin-pointing the source of trouble. These are equipped with a short static probe. They are carried to the danger area and there used to detect location, intensity, and polarity of static charge. Neither permanent installation nor portable instruments are affected by stray fields, hence permit exact determination of static sources.

Underwriters' Laboratories have approved these instruments for Class I Group C and D hazard areas. Instruments are recommended for protection in refineries, rubber and plastic coating, operations where flammable dust is present, and in similar processes.

Results: There have been no fires or explosions since the installation of this system. To date, there has been no case where system is known to have failed to warn of dangerous static. In some cases detection of static has shown safety rules to have been violated by personnel. Actually this has resulted in improved morale and production at the depot. Based on the performance at this naval station, several additional naval ammunition depots have been equipped with similar systems.

(Staticator instruments and warning systems were supplied by The John Hewson Co., Dept. CP, 106 Water St., New York 5, New York . . . or for more information check CP 6599 on handy form, pages 2 and 3.)

**Mounted on panel, vibrator
frees sticking instruments
2500 times a minute . . .**

frequency and applied force are both controlled in continuous duty, eccentric type unit

Uses: Vibrator is designed for attachment to instrument panels — by introducing a controlled vibration it increases meter accuracy and prevents sticking.

Features: Frequency is in the 2000 to 3000 cycles per minute range, shaking force can be varied from 0.85 to 3.4 pounds by varying weight of the eccentric.

Description: Vibrator is an electrically driven device operating continuously. Fractional horse motor requires either 6 to 8 or about 28 volts DC. It is 2-pole, 2-brush design. Units are slightly over 4 inches long, 1-3/8 inches in diameter. Outer enclosure is black anodized aluminum; inner enclosure, cadmium plated steel. Unit weighs about 10 oz.

(Instrument Panel Vibrator has been developed by Globe Industries, Inc., Dept. CP, 125 Sunrise Place, Dayton 7, Ohio . . . or for more information check CP 6600 on handy form, pages 2 and 3.)



*Here's why
it pays
to
know
your*

HSM

HONEYWELL SUPPLIES MAN

C. J. SMOLINSKE, Honeywell Supplies Man in the Indianapolis area, helps check connections of special purpose thermocouple wire on a jet engine test in the CAA Laboratories, Indianapolis. Highly useful in this and many other applications are the new thermocouple wires recently added to the ever-expanding line of Honeywell supplies. An exceptionally wide range of temperature is now covered by new wires with the following insulations: plasticized vinyl chloride insulation for service from -20 to 225° F.; non-impregnated glass insulation for use up to 1200° F.; and fibrous silica insulation for temperatures as high as 2000° F.

Special purpose wires are but one part of the complete supplies service afforded by the HSM Plan. In literally

hundreds of ways, this plan can add new convenience and economy to *all* your pyrometer supplies buying! Find out now, how planned buying—the *HSM way*—can assure you the best in quality, availability and price. Your local Honeywell Supplies Man will be glad to explain how this plan can work for you. Call him today . . . he is as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, 4421 Wayne Ave., Philadelphia 44, Pa. Stocking points in Philadelphia, Cleveland, Chicago, Atlanta, Houston, Los Angeles and San Francisco.



● **Important Reference Data**

Write for new Pyrometer Supplies Buyer's Guide No. 100-4

When inquiring check CP 6601 on handy form, pgs. 2-3

MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS

First in Controls

52-Page Thermostat Catalog shows you...



How To Get Closer Temperature Control At Lower Cost

This Fenwal catalog is the most comprehensive guide to thermostat application ever published. It shows you: **WHY** Fenwal THERMOSWITCH® thermostats respond at the preset temperature you want (between -100°F and +1500°F) within the desired operating differential (can approach 0.1°F in a well-designed system).

HOW to choose the right THERMOSWITCH unit from the ten standard types for controlling temperatures of solids, liquids or gases.

WHERE to apply THERMOSWITCH controls in relation to heating elements in ovens, incubators, stills, dryers and other equipment.

WHEN special modifications may be added to standard THERMOSWITCH units to fit specific conditions.

HOW MUCH standard THERMOSWITCH thermostats and special modifications cost. You'll be surprised at the low list prices.

SEND FOR YOUR FREE COPY of this new Fenwal catalog (No. 400) today. Fenwal, Incorporated, 2412 Pleasant St., Ashland, Mass.

Fenwal

THERMOSWITCH®

Electric Temperature Control and Detection Devices

SENSITIVE...but only to heat

When inquiring check CP 6602 on handy form, pgs. 2-3

INSTRUMENTATION

Photoelectric circuit dispenses with relay "middleman"...

and as a result will drive a 600 count per minute unit at 1000 counts



Increases service
life of counter

Uses: For the actuation of electric counters and various other devices.

Features: Photoelectric unit dispenses with usual plate circuit relay, drives output device directly.

Description: Speed of photoelectric counting has been increased by eliminating plate relay with its inherent time lag. As a result, electric counters normally rated at 600 counts per minute are in operation at 1000 counts per minute with this unit.

Tests of service life of the counter have shown that 400 million counts can be expected when it is operated in the DC plate circuit; normal life of the same counter operating from AC relay had been 100 million counts.

Amplifier is pre-adjusted to maximum sensitivity and "on-the-job" adjustments are made by modifying light beam. Lens systems can be used to discern objects 3/16-inch in diameter, or even smaller.

Photoamplifier has locking-type tube shields and rubber base tube sockets. Amplifier and photo cell are combined in cast aluminum case. Light source is housed in a brass tube in an aluminum mounting block. Maximum plate output is 110 v DC.

(Shadowswitch Photoelectric Unit is a development of The Autotron Company, Dept. CP, Box 722-S, Danville, Illinois... or for more information check CP 6603 on handy form, pages 2 and 3.)

Indicates high and medium intensity gamma rays...

battery-powered unit weighs 2 lb and will operate 200 continuous hours or for battery shelf life

Measuring gamma radiation in the intensity range from background to over 1500 Roentgens. Two models of battery powered instruments weigh only 2 pounds each, and measure only 5 x 3 x 3 inches. Accuracy is reported to be within plus or minus 10 per cent.

Instruments operate on a 4.5-volt power supply, and do not require the usual high resistances, vibrators, rectifiers, etc. Model AG-15 is ordinarily furnished with scale readings from 0.02 to 500 Roentgens per hour for high intensity readings. Model AG-20 has a scale from 0.05 to 50 Roentgens per hour, and is used for medium intensity readings.

Both instruments have only one control which provides for testing and checking batteries as well as turning instrument on or off. Scale of instrument can be illuminated by simply pressing button on instrument front. No warm-up time is needed, in-

THE CAMBRIDGE

INDUSTRIAL MODEL
DIRECT READING

pH METER



- Operated from any AC outlet
- Completely portable. Weighs only 10 lbs. Electrodes are integral parts of the instrument.
- Accurate to .10 pH.
- Shielded glass electrodes permit use of electrodes at any distance from the instrument.
- May be used on a bench or wall mounted.

- Self contained in one metal case including electrodes and buffer solutions.
- Extremely stable.
- Automatic temperature compensation.

Send for bulletin 910-NA.

Also available: Electron-Ray Research Model accurate to .02 pH and Laboratory Model accurate to .05 pH and Single- and Multi-point recorders.

CAMBRIDGE INSTRUMENT CO., INC.

3706 GRAND CENTRAL TERMINAL NEW YORK 17, N. Y.

Pioneer Manufacturers of

PRECISION INSTRUMENTS

When inquiring check CP 6604 on handy form, pgs. 2-3

NOW IT'S UNBREAKABLE!

DWYER

SERIES 1211

**Flexible
SLACK-TUBE
MANOMETER**



**Just roll it up
and tuck it away!**

- **Scale**—convex spring steel—holds Slack-Tube rigid for convenient use and easy reading—regardless of length—yet permits rolling into small space for pocket or service kit
- **Zero Adjustment**—easily obtained by sliding spring-steel scale in lipped saddle.
- **Connections**—1/8" pipe thread openings and rubber tubing adapters provided.
- **Tough Vinyl Plastic Body**—will serve for years. Several inches allowed for scale adjustment.

- ✓ **Extremely Accurate** ✓ **Easy to read**
- ✓ **Standard ranges from 8 to 120 inches in water or mercury**

Write for complete information

F. W. Dwyer Mfg. Co.

335 S. Western Ave. Chicago 12, Illinois

When inquiring check CP 6605 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Instrument is completely immersion-proof and can be used continually at any relative humidity. It operates well within the temperature zone from -10 to 150°F. Operation is also independent of pressure. Shock mounting construction makes instruments perfectly suitable for normal usage.

(Models AG-15 and AG-20 Radector gamma radiation detectors are products of Jordan Electronic Manufacturing Company, Incorporated, Dept. CP, 9042 Culver Blvd., Culver City, California . . . or for more information check CP 6606 on handy form, pages 2 and 3.)

Sixteen-page bulletin explains operating principles of basic circuit breaker designs, and provides engineering data on factors of application. In addition to presenting simplified diagrams showing three basic types of circuit breakers with brief descriptions, manual gives explanations of temperature factors, inrush current effects, tripping and reset time, and time delay curves.

Bul 101 is issued by Heinemann Electric Co., Dept. CP, 332 Plum St., Trenton 2, N. J. When inquiring specify CP 6607 on handy form, pages 2 and 3.

dial of plug-in unit can be set to operate humidity equipment at any point from 10 to 95% RH

Uses: Control of standard humidification and dehumidification units.

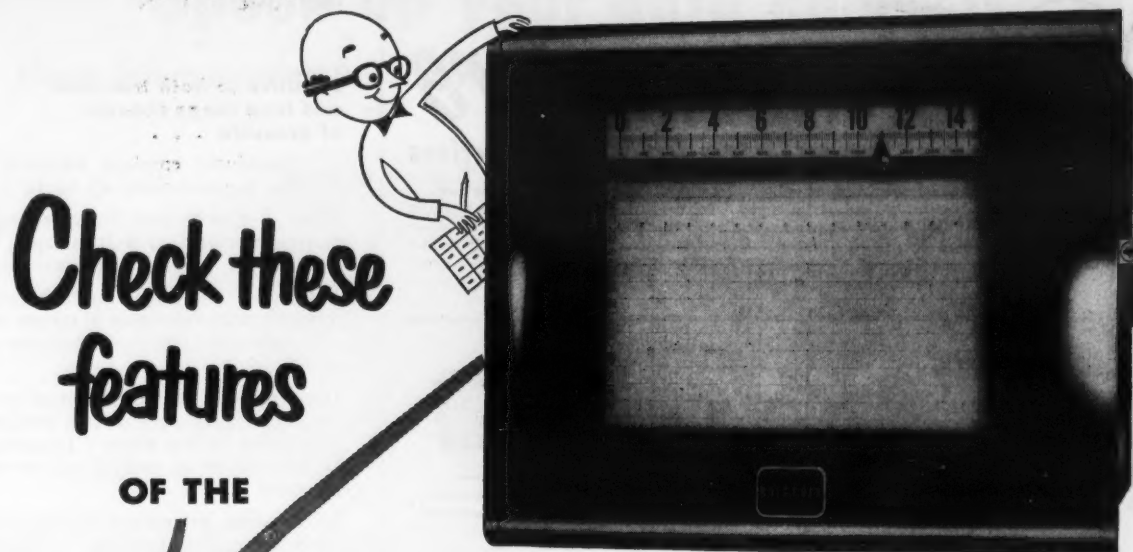
Features: Use of instrument is as simple as use of ordinary thermostat. Dial can be set to actuate equipment at any relative humidity between 10 and 95%.

Description: Electrically powered humidifiers and dehumidifiers can be switched on or off by this simple plug-in unit. Control instrument hangs on wall and plugs in to standard 110 volt outlet. Electric unit plugs directly into the control box.

When humidity falls below set percentage of relative humidity, instrument turns off electric dehumidifier. It can also be wired to turn on humidifying unit when RH falls below the set point.

Sensitive element of the instrument is of the hair-type. Measurements are $7 \times 2\frac{3}{4} \times 2\frac{7}{8}$ inch; it weighs only 2 lbs.

(Plug-in Humidity Controller is a product of Abbeon Supply Company, Dept. CP, 179-15 Jamaica Avenue, Jamaica, 32, N. Y. . . . or for more information check CP 6608 on handy form, pages 2 and 3.)



Check these features

OF THE

BRISTOL DYNAMASTER

**—the electronic master-mind for your measuring,
recording and controlling problems**

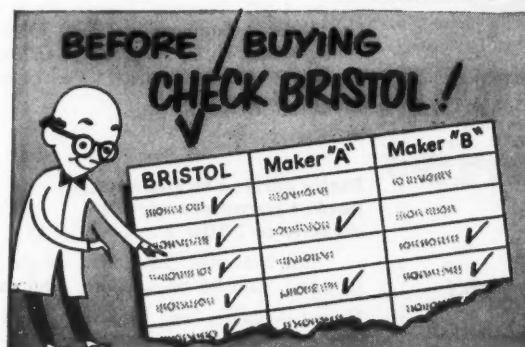
- ✓ Continuous-balancing electronic circuit responds instantly to minute changes
- ✓ All types of electric and air-operated controllers offered
- ✓ Available as a self-balancing bridge or potentiometer
- ✓ Trouble-free operation
- ✓ Electronic component uses vacuum tubes available at any radio supply house
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- ✓ Multiple recorders up to 16 points
- ✓ Components interchangeable and easily replaced on all Dynamaster models
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- ✓ Exceptionally unaffected by stray currents (1000 to 1 discrimination).

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FOR DETAILED PROOF of the sensitivity, versatility and reliability of the electronic Dynamaster, use the coupon or write for Catalog P1245.

The dependable Guidepost of Industry

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



THE BRISTOL COMPANY
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**Please send catalog giving details of
Dynamaster performance to:**

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COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 6609 on handy form, pgs. 2-3



Thermometers

in all forms—ranges—stem lengths—connections

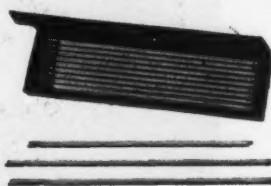
Whether your requirement calls for certified laboratory thermometers . . . or rugged all-metal industrial types . . . or thermometers for remote reading . . . you'll find exactly what you require in the Weston-TAG line—the most comprehensive line of quality thermometers ever offered by ONE manufacturer. Literature on request. WESTON Electrical Instrument Corporation, 617 Frelinghuysen Avenue, Newark 5, New Jersey.

Laboratory



ALL-METAL

—have readable, dial-type scales and corrosion-resisting stainless steel stems—stem lengths from 2" to 24"—ranges from low as -100°F. to high as 1000°F.—accuracy 1/2 of 1% of thermometer range.



GLASS

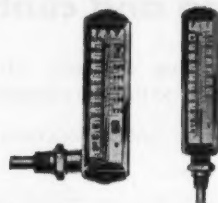
—certified sets of ASTM Testing thermometers with overlapping ranges in protective case. Ranges from -36°F. to high as 760°F. Also precision and standard etched stem thermometers for general testing.

Industrial



ALL-METAL

—provide unmatched readability and durability—accuracy within 1% of thermometer range. Available in all types, ranges and stem lengths (2 1/2" to 72") for all requirements.



GLASS (Metal Case)

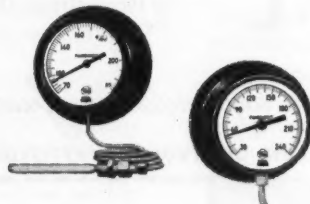
—available in all forms, all ranges, stem lengths and connections. Accuracy within one scale division. Also submarine types, metal and cupcase thermometers.

Remote Reading



ELECTRICAL

—resistor bulb sensing element permits mounting indicator any distance away from point of measurement. Multiple remote readings also possible by use of selector switch and several bulbs.



PRESSURE ACTUATED

—for remote reading, in 5, 6 and 8" dial sizes. Ranges from low as -325°F. to high as 1000°F. Accuracy one scale division unaffected by vibration or severe shock. Cases of iron, brass, or plastic.

WESTON Temperature Instruments

— TO INDICATE — RECORD — CONTROL

When inquiring check CP 6610 on handy form, pgs. 2-3

INSTRUMENTATION

Sensitive to both transient and long range changes of pressure . . .

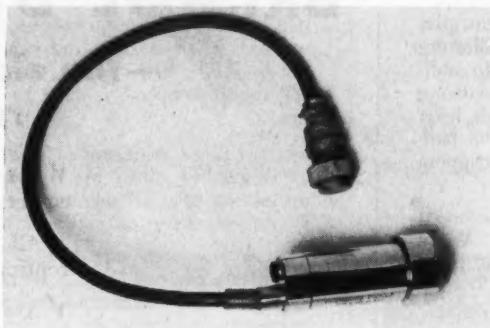
transducer employs electrical bridge circuit for measurements up to 10 psig

Uses: Can be used for measuring static or slowly varying pressures, as well as rapid, transient surges. Temperature range is extremely wide.

Features: By combining both fast and long-range response, transducer may eliminate one of two pressure measuring pick-ups which are present in some systems.

Description: Construction of pressure transmitter is extremely rigid so that acceleration has negligible effect in any plane. Transducer's output may be recorded on an oscillograph or with conventional recorders.

In operation, pressurized fluid or gas enters a fluted, pressure-sensitive cylinder. Around this cylinder are wound the four arms of a bridge circuit. Change of dimensions of cylinder are directly proportional



Diameter of pick-up: 1 1/2 inches

to pressure variations, and are shown as changes of resistance in the bridge circuit. Resulting bridge unbalance produces a similar proportional voltage which is linear to plus or minus 0.5 per cent of full scale.

Transducer is 1-1/2" in diameter, weighs 9 oz. Body is heavily plated aluminum, suitable for high moisture conditions. Current models are designed for 10 psig operation — later models will have full scale ranges to 5000 psig. Future models are also to be available in materials suitable for corrosive conditions.

(Type 4-301 Pressure Transducer is a product of Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 8, California . . . or for more information check CP 6611 on handy form, pages 2 and 3.)

Easily carried to the spot, pocket pyrometer reads directly to 3300°F . . .

just hand-size, instrument weighs only 5-1/3 oz and requires no auxiliary equipment

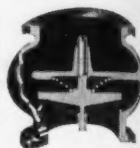
Only 6 1/2 inches long by 2-1/3 inches outside diameter, this optical pyrometer weighs 5-1/3 ounces. It can be used for direct reading of temperatures up

STOP COSTLY WATER HAMMER NOW!

WILLIAMS-HAGER
FLANGED

Silent CHECK VALVES

Williams-Hager Flanged Silent Check Valves are the economical and dependable answer to troublesome and costly "water hammer" in all pump lines. These valves operate effectively in horizontal, vertical, upside down or angular positions—under any service or pressure condition.



WRITE FOR
BULLETIN WH-851

This bulletin gives complete details on the cause, effect and control of damaging "Water Hammer." Use the coupon below for prompt delivery of your copy.



CHECK VALVES

THE WILLIAMS GAUGE CO.
3015 Pennsylvania Ave. Pittsburgh 33, Pa.

MAIL THIS COUPON
Today!

THE WILLIAMS GAUGE COMPANY
3015 Pennsylvania Avenue
Pittsburgh 33, Pa.

Please send a copy of Bulletin WH-851 on "Water Hammer, Cause, Effect and Control in Piping Systems."

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____
ZONE _____ STATE _____

When inquiring check CP 6612 on handy form, pgs. 2-3

CHEMICAL PROCESSING

to 3300°F. Instrument is suitable for conventional use in ceramic, chemical, metallurgical and, related fields of work.

Sensitive element is a small bimetal spiral spring acting as radiation tracer. Free end of spring is provided with a pointer which indicates temperature. Measuring spiral is artificially aged by temperature changes before being installed in instrument. Bimetal temperature indicator is arranged in a telescope-like housing. Observer views both heated object and deflection of the needle on a calibrated scale.

Fixed end of bimetal spiral is connected to a second bimetal, arranged to compensate for ambient temperature. Calibration adjustment is made by correcting second spiral's position by hand adjusting eye piece. Instrument is protected against unwanted radiation such as sunlight. A red filter is furnished for eye protection.

(Pocket Pyrometer is produced in Germany, distributed by Allied Engineering Div., Ferro Corp., Dept. CP, Cleveland, Ohio . . . , or for more information check CP 6613 on handy form, pages 2 and 3).

A company name and address . . .

at the end of each editorial article makes it easy for you to follow-up on process-improving ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Response time of air meter is less than one second, accuracy is 1 1/2 % . . .

0 to 400 and 400 to 6000 feet per minute velocity readings can be made on same instrument

Direct readings of even widely scattered points are made with this air & gas velocity meter. Response time is less than one second, and accuracy about 1 1/2%. Each instrument is individually calibrated.

Electrically powered instrument does not respond to temperature variations, radiation, or normal fluctuations in atmospheric pressure. Sensing element is constructed entirely of noble metals, requires no maintenance. Indicating unit may be remotely located or supplied with a selection and balancing system so that several sensing probes may be used in a specific application.

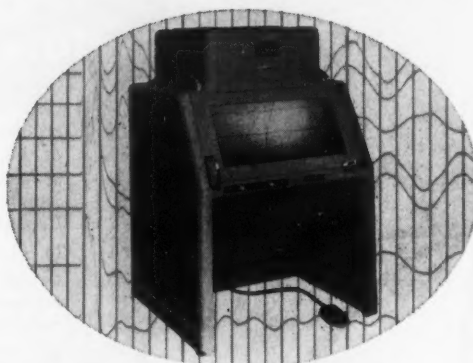
Dual range scale calibrated for air velocity reads from 0 to 400 feet per minute and from 400 to 6000 feet per minute. Non-linear scale is expanded at the low end. Minimum readings are about 5 feet per minute.

Either a directional probe or a horizontal, non-directional probe may be used. Special probes can be designed for unusual requirements.

(Precision Air-Meter is a product of Hastings Instrument Company, Dept. CP, Super Highway at Pine Avenue, Hampton 10, Virginia . . . or for more information check CP 6614 on handy form, pages 2 and 3.)

Speed up your data analysis

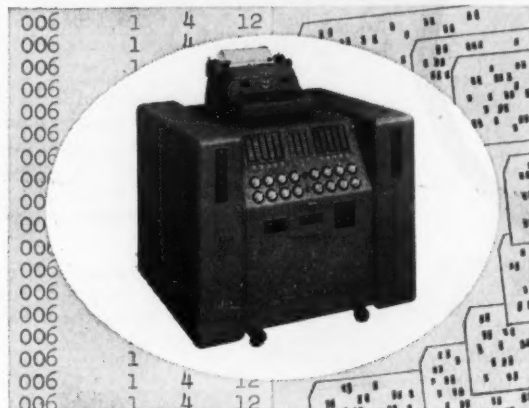
These Telecomputing Instruments measure, record, plot at automatic speeds:



Today you can reduce and analyze film and oscillograph data faster than ever before. Telecomputing Instruments, in conjunction with electronic computing equipment, have made this possible.

The following sequence of automatic data analysis is typical:

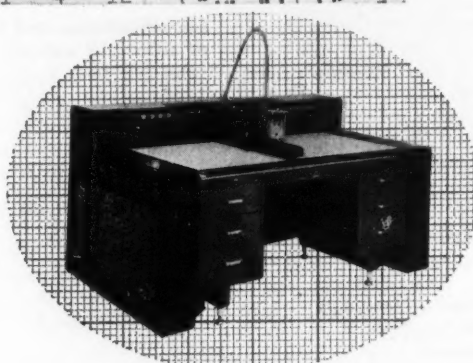
← **The Universal Telereader measures** records ranging from 16 and 35 mm film to 12" oscillograph records. Speed: up to 50 measurements per minute.



← **The Telecordex records** the Telereader measurements in decimal form electronically on its own electric typewriter, transmits the data to an IBM Summary Punch for card punching.

The IBM card punch receives the data from the Telecordex, punches it and continues the cycle.

All necessary calculations, including linear and non-linear calibrations, are performed on IBM or other electronic computers.



← **The Teleplotter plots** the data electronically from IBM cards or a manual keyboard. Speed: up to 70 points per minute.

Technical bulletins on the Universal Telereader, Telecordex and Teleplotter will be mailed you upon your request. Coupon below is for your convenience.

TELECOMPUTING Corporation

Burbank, California

Electronic and mechanical engineers can build their future with Telecomputing. Write for information.

When inquiring check CP 6615 on handy form, pgs. 2-3

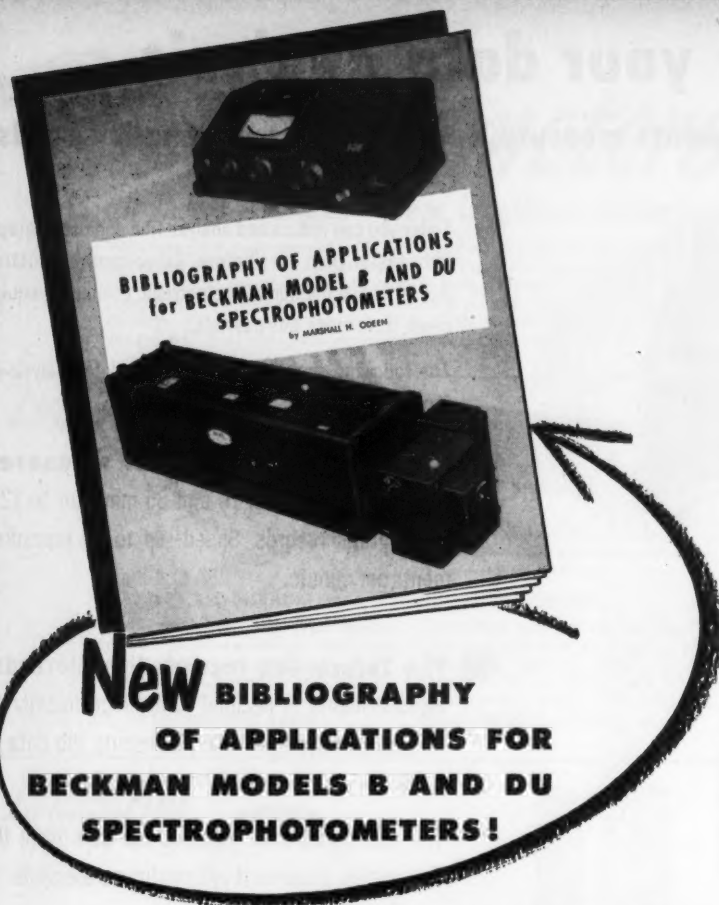
Mr. Preston W. Simms, Engineering, Dept. CP-12
Telecomputing Corporation, Burbank, California
Dear Sir: Please send me:
☐ Universal Telereader Technical Bulletin TC 101
☐ Telecordex Technical Bulletin TC 102
☐ Teleplotter Technical Bulletin TC 103

Name _____

Company _____

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City and State _____



**BIBLIOGRAPHY OF APPLICATIONS
for BECKMAN MODEL B AND DU
SPECTROPHOTOMETERS**
by MARSHALL H. ODEH

**New BIBLIOGRAPHY
OF APPLICATIONS FOR
BECKMAN MODELS B AND DU
SPECTROPHOTOMETERS!**

BECKMAN MODEL B SPECTROPHOTOMETER

A moderately priced precision instrument employing a glass-prism monochromator. Its low cost permits the application of accurate, rapid spectrophotometric methods to routine analyses formerly accomplished by more tedious procedures. High photoelectric sensitivity is maintained over the wide spectral range of 320 to 1000 millimicrons.

BECKMAN MODEL DU SPECTROPHOTOMETER

Versatile quartz spectrophotometer unsurpassed for accuracy, resolution, range of wavelength, and over-all performance. Measurements may be made in the ultraviolet, visible and near-infrared regions. More than a dozen special accessories are available for almost every type of photometric analysis.

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► Special Sections include listings on Structural Identification... Rate and Equilibria Studies... Emission (Including Flame Spectrophotometry)... Special Instrumentation and Standards... Calibration Filters... Theory... and Miscellaneous References

A free copy of this valuable bibliography will gladly be sent those supplying their job titles and the type of product or process in which they are working, together with name and address. See your Beckman Dealer or write for Data File #14-11

BECKMAN INSTRUMENTS, INC.

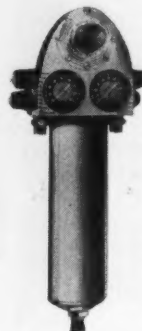
SOUTH PASADENA, CALIFORNIA
Factory Service Branches: New York—Chicago—Los Angeles

When inquiring check CP 6616 on handy form, pgs. 2-3

INSTRUMENTATION

Handling 100 cfm at 100 psi, air transformer also traps 97% of water...

transformer has 2 regulated and 2 unregulated air outlets, plus moisture traps and drain



Transformer employs two-stage regulating principle providing fast manual control of output pressure. Control knob actuates a small pilot regulator which operates diaphragm of the large regulator. Pressure loss is low. Transformer has two regulator outlets and two unregulated. Capacity is 100 cfm.

Oil and moisture are eliminated by a trap so that clean air is delivered to outlets. As oil and moisture accumulate in the condenser tube, they can be removed by operating a push-pull drain knob. After draining, pulling knob down closes the drain. In tests, 97% of entrained water was removed from 100 cfm of air at 100 psi.

Condenser chamber of transformer is built entirely of corrosion-resisting metals; head of transformer and housing for pressure gages, valves, etc. is a zinc die casting. Condenser is gasketed at top and bottom. Separating mechanism is a mechanical disc-type filler. Diaphragm is made of soft rubber with a fabric insert.

(Type HLD Air Transformer is a product of The De Vilbiss Company, Dept. CP, Toledo 1, Ohio... or for more information check CP 6617 on handy form, pages 2 and 3.)

Specifications and features of solenoid valves

Four-page bulletin describes features and specifications of eleven different types of electrically operated solenoid valves. Units feature adjustable timing of the closing stroke on units to be used with operating pressures to 300 psi.

Cutaway view illustrates features and operation of typical valve. Photos and dimension chart are included in bulletin. "Atkomatic Valves" is issued by Atkomatic Valve Co., Dept. CP, 545 W. Abbott St., Indianapolis, Indiana. When inquiring specify CP 6618 on handy form, pages 2 and 3.

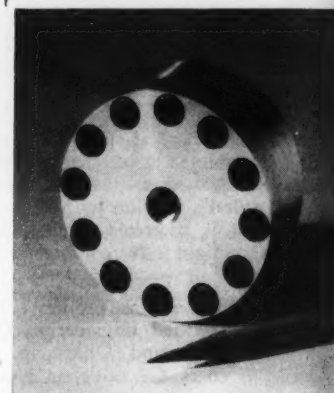
Printed records of processing data are read directly and tabulated by rapid scanning system...

reads voltage, temp, flow or other variables and gives alarm where required

This Metrotype system of numerical recording and telemetering makes printed records of process data directly from primary information. Readings are presented in numerical form tabulated for convenient use and on a single page for easy handling and storage. Instrument, which is known as Telescan, reads voltage, current power, temp, flow, or anything

TRANS-SONICS* ISOLATORS

PROVIDE A SAFE MEANS OF
SEPARATING CORROSIVE MA-
TERIALS FROM LIQUID FILLED
INSTRUMENTATION SYSTEMS.



The Type 40 ISOLATOR
is a new device
featuring:

- LARGE VOLUMETRIC
DISPLACEMENT
- NEGLIGIBLE
PRESSURE DROP
- BURST-PROOF
CONSTRUCTION

The Isolator consists of a special Kel-F diaphragm which is clamped in a corrosion resistant metal case. Line pressures to 1000 psi can be used with standard models. Isolators for use on line pressures as high as 3000 psi are available.

The case is usually made of 61S Aluminum or 18-8 Stainless Steel. Other materials can be used for compatibility with specific liquids or gases.

— Request Free Bulletin 40 —

TRANS-SONIC, INC.

Bedford Airport, Bedford 3, Mass.

— Trans-Sonics Products —

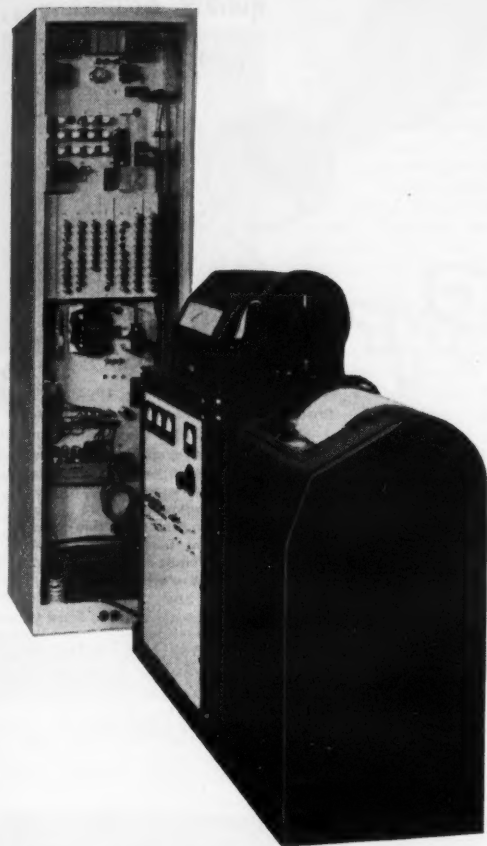
Transducers: Acceleration — Pressure
Temperature — Electro-Hydraulic
Amplifiers

Isolators — Torque Motors
Potentiometers: pressure actuated

*The word "TRANS-SONICS" is a Trade Mark

When inquiring check CP 6619
on handy form, pgs. 2-3

CHEMICAL PROCESSING



Instrument reads data directly from many sources and records on single page

else that can be translated to an electrical indication with a suitable transducer. Where required, an alarm can be set off.

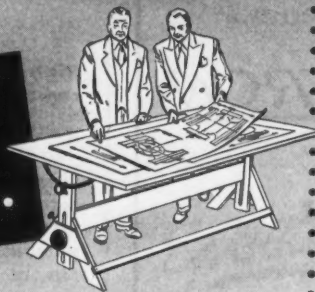
Messages are stored in form of Teletype tape and read by tape transmitter. Readings are printed at rate of one per second, but tape is punched at rate of 25 digits per second. Tape can be used to operate directly into automatic business machines for computation. Readings can be printed locally or transmitted any distance. Since readings from many sources and different things can be combined on same page, saving in floor and panel space results.

(Product of Tigerman Engineering Co., Dept. CP, 4332 N. Western Ave., Chicago 18, Ill. . . . or for more information check CP 6620 on handy form, pages 2 and 3.)

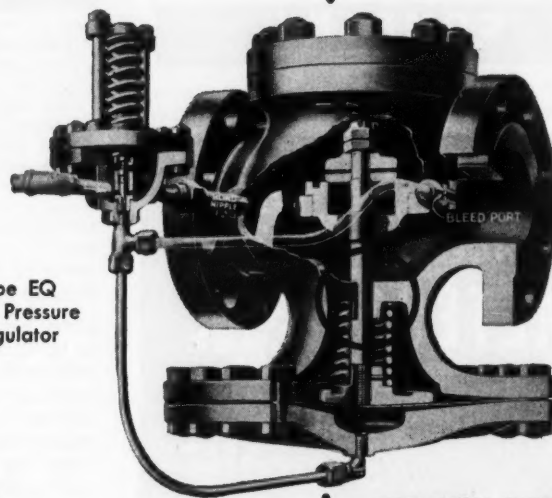
Chart illustrates value of control panels

Advantages, description, and uses of Pantro industrial control panels are offered in two-page, illustrated catalog sheet, which is punched for incorporation into ring binder files. Cat Sheet is issued by Industrial Control Panel Co., Dept. CP, 247 E. Illinois St., Chicago 11, Ill. When inquiring specify CP 6621 on handy form, pages 2 and 3.

**HOW
SPENCE
DESIGN...**



*eliminates
stuffing
boxes*



Type EQ
Back Pressure
Regulator

*A few
other design
features:*

Spence

**SPENCE ENGINEERING
COMPANY, INC.**

WALDEN, NEW YORK

All Spence main valves and most pilots are built without stuffing boxes. This packless construction is made possible by the use of a large balanced metal diaphragm which eliminates the need for closely fitted parts. Result? More accurate regulation.

Valve stem wear is also reduced in the Spence packless design. Result? Low maintenance, years of trouble-free service.

Spence makes a wide line of automatic regulating valves: Pressure, Temperature, Differential Pressure, Back Pressure, Pump Governors and many other types. Write for bulletin 100 giving full details.

SECO METAL SEATS AND DISCS—Durable SECO Metal resists wiredrawing. More than twenty years of experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

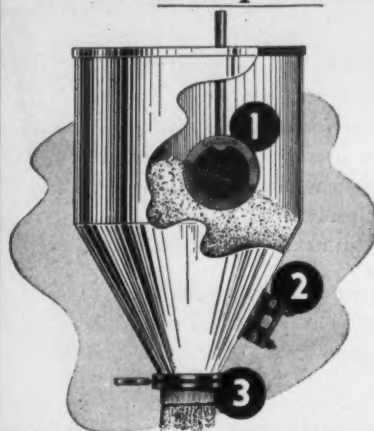
PROTECTED SPRINGS—The internal springs in the Spence Main Valve and Pilot are out of the path of the steam or other fluid flowing through the valve. They operate at low unit stress for exceptionally long life.

METAL DIAPHRAGMS—Located in a cooled zone with a condensate seal above and below, never have to be replaced under normal conditions.

When inquiring check CP 6622 on handy form, pgs. 2-3

for Complete Hopper Efficiency

SYNTRON



1. Hopper Level Switches

Eliminate spillage and shortage of materials. Automatically maintain desired levels of materials — from fine to coarse — in bins and hoppers. Control feeding.

2. Electric Vibrators

Assure free-flowing bins, hoppers and chutes. Eliminate arching and plugging of materials without hammering and rodding that damages equipment and wastes manpower.

3. Flow Control Valves

Control flow of bulk materials from bins, hoppers and chutes. Rotating control lever increases or decreases opening of flexible iris type diaphragm and flow of material without jamming or clogging.

Write For FREE Illustrated Folders

SYNTRON COMPANY

140 Lexington Avenue

Homer City, Penna.

When inquiring check CP 6623 on handy form, pgs. 2-3

MEASURE LIQUIDS ACCURATELY
TO PREVENT WASTE AND LOSS
with the WIDE RANGE of
NIAGARA METERS



Niagara metering assures accurate measurement of almost any volume or type of liquid. Waste and losses are cut down, liquid quantity formulae may be followed more precisely. Liquids keep moving smoothly and continuously in the meter for time-saving efficiency. Measure with Niagara Meters!

Send coupon for complete details today.

1 30 to 1000 gallons per minute

BUFFALO METER CO.

2892 MAIN STREET

BUFFALO, N. Y.

Please send me full information on use of Niagara Liquid Meters for:

Liquid.....
Temp.....°F. Pressure.....p.s.i.
Flow rate.....g.p.m.
Maximum Batch.....gals.
Company.....
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When inquiring check CP 6624 on handy form, pgs. 2-3

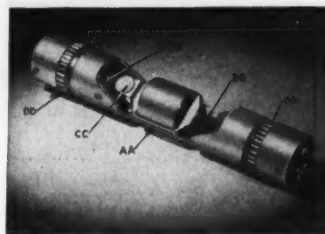
INSTRUMENTATION

High sensitivity, ruggedness combined in meter . . .

accuracy is maintained at 1/2% even after long usage

Uses: Meter is of DC type but can be applied to AC measurements in conjunction with suitable rectifying means. Unit can be used for checking and measuring transistor circuit values, as well as in vacuum-tube circuits, where at present only a vacuum-tube voltmeter can serve.

Features: Laboratory model has full-scale sensitivity of only one microampere and coil resist-



Meter cartridge has moving coil (AA), which is suspended at both ends by twin wires (BB). Wires are kept under tension by disk springs contained in adjustable end pieces (DD). Mirror for light-pointer type of meter is at (CC)

ance of under 4500 ohms. This may be compared to conventional meter of five microamperes sensitivity and 5000 ohm coil resistance.

Meter has no delicate hair springs to be damaged. Bifilar wires absorb shocks that might impair conventional sensitive meters. Unit also has electrical ruggedness, with momentary overload factor of 1000 times for light-pointer type and one hundred times for mechanical-pointer type.

Accuracy is maintained at 1/2% even after long and trying usage.

Description: Greibach meter is based on movement in form of removable and replaceable cartridge, which is refinement of d'Arsonval principle. It has a movable coil, suspended on bifilar or twin wires. This design eliminates frictional losses.

Light-pointer model incorporates light source and optical system for projecting luminous center-line oval on meter scale, eliminating parallax difficulties. Light source operates on AC power by means of attachment cord that

Take surface temperatures

quickly, accurately...

with the

Pyrocon

The handy Alnor Pyrocon is unequalled for quick, accurate reading of all surface temperatures . . . whether surfaces are metallic or non-metallic, flat or curved. Accurate temperatures are easily understood on the Pyrocon's direct reading scale face . . . without interpolation or need of conversion tables. A wide selection of thermocouples and extension arms permits adaptation to many types of service. For complete details and prices, send for Bulletin No. 4257. Illinois Testing Laboratories Inc., Room 504, 420 N. LaSalle Street, Chicago 10, Ill.

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 6625 on handy form, pgs. 2-3

BUILDERS

BUILDERS-PROVIDENCE

NEED
RECORDING, INDICATING,
CONTROLLING
INSTRUMENTS ?

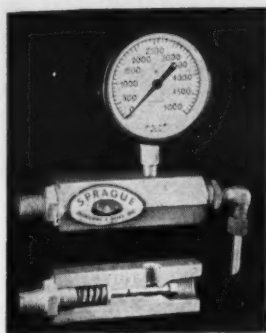
For full information on BUILDERS EQUIPMENT for metering and controlling flow of liquids, steam, or dry materials, write Builders-Providence, Inc., Division of Builders Iron Foundry, 458 Harris Ave., Providence 1, Rhode Island.

BUILDERS-PROVIDENCE

When inquiring check CP 6626 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROTECT YOUR GAGES!



New Shut Off Valve automatically cuts out gage from system when hydraulic or pneumatic pressure goes beyond its operating limit. Automatically opens when pressure is again within operating range of gage. (Cut-in point approx. 80% of set cut-out point.) Available for low pressures—30, 60, 100, 200 and 300 PSI. and high pressures—500, 1000, 1500, 2000, 2500, 3000 and 5000 PSI. Sprague Gage Shut Offs installed in a hydraulic system with

multiple gages of various ranges, save valuable man hours. They eliminate the necessity of the operator opening and closing manually operated shut off valves for the various gages in the system. Supplied with standard pipe thread connections but can also be furnished with AN adaptors for aircraft fittings. Connection to the system is made at the end of shut off, 1/2" pipe thread. Connection to gage is made on the side of shut off, 1/4" pipe thread. Overall length 5 1/2 inches. Body is 1 1/2 inch hexagon stock. Other models with bronze or stainless steel bodies available for water service. Finest construction. Individually tested and fully guaranteed. When ordering, specify capacities desired. Write today for bulletin.

SPRAGUE ENGINEERING & SALES CORP.

1144 West 135th St., Gardena, Calif.

Designers and Manufacturers of Precision Aircraft and Industrial Test Equipment.

When inquiring check CP 6627 on handy form, pgs. 2-3

REPUBLIC VALVES

INDUSTRIAL • CHEMICAL • AIRCRAFT

J.I.C. AND AN STANDARD TUBE ENDS

Skilfully engineered 2, 3, and 4-way Plug Valves are built by Republic in brass and aluminum alloy, sizes 1/8" to 1". Hydraulic Relief Valves opening at pressures up to 450 psi made in brass, aluminum alloy, steel, and stainless steel, sizes 1/8" to 1/4". Pipe, AN or J.I.C. tube ends, or combinations.

Also manufacturers of high quality globe, needle, low and hy-pressure check valves, and special valves to specifications.

Write for complete catalog and name of nearest distributor.



4-WAY PLUG VALVE, WITH DRAIN

B3



CHECK

RELIEF

PLUG

GLOBE

NEEDLE

REMO

REPUBLIC MANUFACTURING CO.

1930 WEST 77TH STREET • CLEVELAND 2, OHIO

When inquiring check CP 6628 on handy form, pgs. 2-3

DECEMBER, 1952

INSTRUMENTATION

includes step-down transformer, or on self-contained battery. Other laboratory models incorporate conventional mechanical pointer.

In addition to laboratory models, portable meter and round-case panel-mounting instrument can be obtained. Latter unit is built to full-scale sensitivities of 20 microamperes, yet has only 500 ohm coil resistance.

(Offered by Columbus Products Corp., Dept. CP, 1010 Saw Mill River Road, Yonkers, N. Y. . . or for more information check CP 6629 on handy form, pages 2 and 3.)

Provides gradual control of flow in 6-inch line with 15 psi air . . .

and small valves are available from 1 1/2-inch and up

Uses: General purpose pneumatic control valve can be used for replacement of old valves (either automatic or manual), and for new applications on lines from 1 1/2 to 6". Maximum permissible temperature for valve itself is 250°F — though ambient temperature of control assembly is limited to range from minus 20 to plus 160°F.

Features: Butterfly valve provides modulating control on these pipelines with only 15 psi controlled air pressure.

Description: Valve has been designed for control of air, water, or steam flow. Its pneumatic motor is designated as Grad-U-Motor. Controlled air pressure range provides full operation with 0 to 15 psi. It is also possible to adjust mechanical stops provided on the motor so that wing rotation is limited as needed.

Valves are available in sizes 1 1/2, 2, 2 1/2, 3, 4, 5, and 6 inches. Each uses threaded connections. Body and wing material is bronze. Maximum allowable pressure is 20 psi.

An optional accessory, the Grad-U-Motor relay, is available for positive valve positioning in throttling applications.

(Grad-U-Motor is a development of Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 6630 on handy form, pages 2 and 3.)

speed

KARL FISCHER,
MICRO and OTHER
TITRATIONS with

the new improved



FISHER TITRIMETER

... NOW FASTER, MORE ACCURATE THAN EVER!

The Fisher Titrimeter has been completely redesigned. Now you can not only determine acid-base, oxidation-reduction, precipitation, and complex ion concentrations with greater speed, ease and accuracy than ever before. By an easy set-up change you can also handle micro work with similar efficiency. Another set-up, and you are ready for fast moisture determinations by the important Karl Fischer technique.

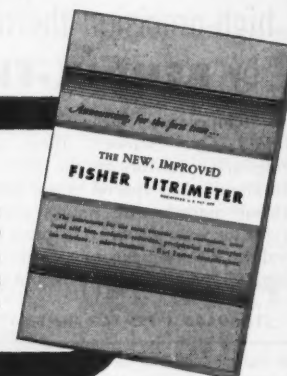
The new unit features such design changes as: (1) a new controlled-speed, magnetic stirrer and motor held in a swivel-head beaker platform, (2) fixed electrodes, held by spring tension for easy changing, (3) relocation of "magic-eye" to left of sample area, bringing all

points of visual interest within a readily encompassed field of view, and (4) provision for micro and Karl Fischer adaption (complete accessories).

As in previous models, the instrument detects the *exact* end point of a titration by supersensitive electronic measurement. It determines the amounts of metals in alloys, ores, salts, etc.; pH of fertilizer "balances", pickling bath wash waters and tanning solutions; free acid in whiskies; ascorbic acid in fruit juices; etc. . . plus the wide range of Karl Fischer moisture determinations.

WRITE FOR BOOKLET CP 8 TODAY!

It illustrates and explains the many uses of the new Titrimeter and accessories as well as the simplicity and efficiency of its operation. There is no obligation whatever.



Complete stocks of laboratory instruments, apparatus, reagent chemicals, furniture, and supplies at: 717 Forbes St., Pittsburgh 19, Pa.—635 Greenwich St., New York 14, N. Y.—2850 S. Jefferson Ave., St. Louis 18, Mo.—7722 Woodbury Dr., Silver Spring, Md.—904 St. James, Montreal, P. Q., Canada—245 Carlaw Ave., Toronto 8, P. O., Canada.

FISHER SCIENTIFIC

America's Largest Manufacturer-Distributor of Laboratory Appliances and Reagent Chemicals

When inquiring check CP 6631 on handy form, pgs. 2-3

WHERE YOU CAN BUY

Rochester DIAL THERMOMETERS

For added pressure and corrosion resistance, ROCHESTER bi-metallic thermometers are stainless steel welded at case, stem and plug.

Available with handy recalibration feature. Order from your nearest ROCHESTER Representative listed below:

BALTIMORE 18, MD.
Energy Control Co.
2127 Maryland Ave.

BOSTON, MASS.
G. K. Kerisher
108 E. Dedham St.

CHARLOTTE 1, N. C.
Mac-Tric Control Co.
113 South Brevard St.

CHICAGO 20, ILL.
Rochester Mfg. Co.
9443 South Ashland Ave.

CLEVELAND 13, OHIO
Ralph M. Nelson
712 Marshall Bldg.

CORPUS CHRISTI, TEXAS
Brance-Kracy Co.
118 North Staples

DETROIT 2, MICH.
Metrol Co.
5538 Cass Ave.

HOUSTON, TEXAS
Brance-Kracy Co.
P. O. Box 1724

KALAMAZOO, MICH.
Metrol Co.
420 W. South St.

KANSAS CITY 6, MO.
Snyder & Co.
903 McGee St.

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Energy Control Co.
868 Broad St.

NEW HAVEN, CONN.
Energy Control Co.
31 State St.

NEW YORK 7, N. Y.
Energy Control Co.
5 Beekman St.

ODESSA, TEXAS
Industrial Instrument Corp.
P. O. Box 1909

PHILADELPHIA 3, PA.
Devic Engineering
1701 Walnut St.

PORTLAND, OREGON
G. R. Schumann Co.
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SAN FRANCISCO 3, CALIF.
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1355 Market St.

SHREVEPORT 88, LA.
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P. O. Box 967
266 Patton Ave.

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MacGregor-Sears Co.
108 North 18th St.

SYRACUSE 6, N. Y.
George O. Miller
441 Ridgewood Drive

TULSA 10, OKLA.
Snyder & Co.
1432 East 6th St.

WICHITA, KANSAS
Snyder & Co.
P. O. Box 2836
South Wichita Station

IN CANADA

TORONTO, ONT.
Baker Instruments Ltd.
185 Davenport Road

VANCOUVER, B. C.
Baker Instruments Ltd.
666 Alexander St.

ROCHESTER Dial Thermometers are a product of ROCHESTER MANUFACTURING COMPANY, INC., Rockwood Street, Rochester 10, New York

When inquiring check CP 6632 on handy form, pgs. 2-3



Just right for your job!

high-precision thermistors by BENDIX-FRIEZ

As temperature measuring elements and liquid level sensors, these temperature responsive resistors are the best you can buy. In standard or special types, their high-precision manufacture makes them precisely right for your job when it comes to resistance values, size, temperature coefficient, mountings and quality. Ask us about applications.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ -30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

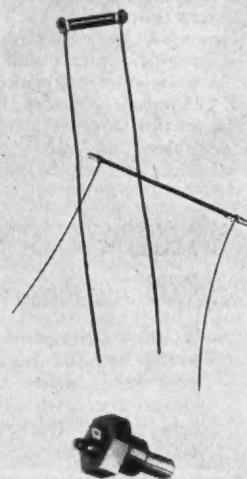
Write for details.

FRIEZ INSTRUMENT DIVISION of . . .

1450 Taylor Avenue, BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division
72 Fifth Avenue, New York 11, N. Y.

When inquiring check CP 6633 on handy form, pgs. 2-3



Used in this typical application for sensing the temperature of hydraulic oil.



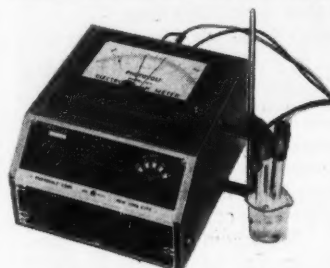
INSTRUMENTATION

Simplicity of pH meter allows it to work on 3 batteries . . .

with life of 2000 hours before replacement is needed

Simple, battery-powered pH meter makes readings from 0 to 14 on a single scale. Scale is 5 1/2" long, or 1 mm per 0.1 pH division — it is readable to 0.02 pH, accurate to 0.03 pH. Millivolt scales are also provided: minus 400 to plus 400, and minus 800 to plus 800 mv. Metal electrodes are used for millivolt measurement; any standard glass-calomel electrode can be used.

Three radio type batteries are used for power. Sub-miniature electronic tubes are enclosed in a single



Portable pH meter is compact, self-contained

plug-in unit. Small current drain gives a battery life of 2000 hours or about one full year in eight-hour a day operation.

Stabilized power supply unit is available for operation from 100-125 v AC. Battery-powered unit is self-contained and compact. Direct reading is made (without balancing) and no warm-up is needed.

(Model 125 pH Meter is a product of Photovolt Corp., Dept. CP, 95 Madison Ave., New York 16, N. Y. . . or for more information check CP 6634 on handy form, pages 2 and 3.)

Differential pressures sensed electronically at 1500 psi . . .

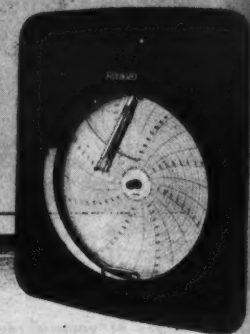
half-volt signal by 0-20 or 0-200 inches water

Uses: Differential pressure transmitter senses pressures from 0-20 to 0-200 inches of water at static pressures up to 1500 psi.

Features: Full scale signal range runs from 0.000 to 0.500

LIQUID LEVEL

Indicators Recorders Controllers



The completeness of the Foxboro Line is your assurance of unbiased recommendations on instruments to indicate, record, or control liquid level. Whatever type of system you require (bubble tube, differential pressure, float, diaphragm box) . . . whatever your problem (such as turbulent, viscous, or corrosive liquids, whether in open or pressured vessels) — Foxboro offers the most efficient instruments for the job. Why not consult Foxboro first — and be sure! Write The Foxboro Company, 8112 Norfolk St., Foxboro, Mass., U.S.A.

FOXBORO Instruments

When inquiring check CP 6635 on handy form, pgs. 2-3

STOP WATCH FACTS



ONLY Minerva CAN OFFER

• NEW UNCONDITIONALLY GUARANTEED COIL-SPRING!

There is no wear . . . no friction . . . no failure with the non-breakable Minerva coil-spring, because Minerva places coil-springs at critical wearing points for shock-proof, uninterrupted service! A new accuracy standard guaranteed for life!

• **INDEPENDENT HAMMER SPRING** gives perfect flyback to zero on every "Button on Side" time out feature — guaranteed for life!

• **"Noiseless" snap-back** time out feature on all "Side Slide" models.

IN FACT no other stopwatch offers MINERVA design advantages for lifetime accuracy and sturdiness under rugged industrial conditions. Ideal for Time and Motion Study, Precision Process Timing. Accuracy certified by our Western Electric Electronic Timer. Write today for complete catalog

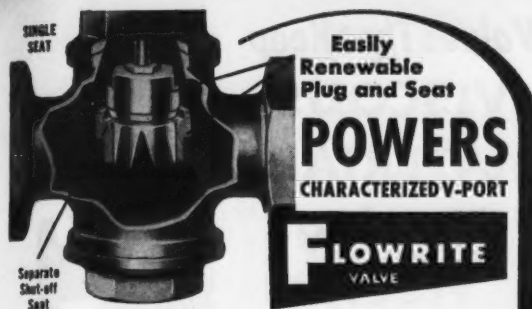
M. DUCOMMUN Company

Specialists in Timing Instruments

580 Fifth Ave., New York 19 • Plaza 7-2540

When inquiring check CP 6636 on handy form, pgs. 2-3

CHEMICAL PROCESSING

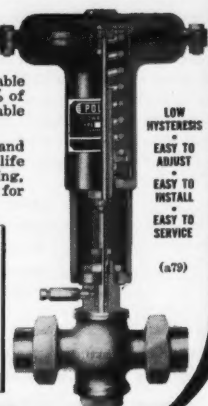
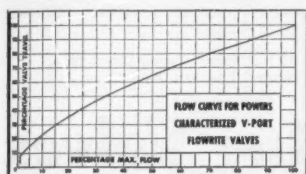


Gives Better Control with Less Maintenance

SPECIAL FLOW CHARACTERISTICS—High lift V-Port plug provides proportional flow throughout entire lift of stem as shown in chart below.

WIDE VARIETY OF SIZES— $\frac{1}{2}$ " valve available with plugs to give 15%, 30%, 60% or 100% of maximum capacity. Easily interchangeable without removing valve from line.

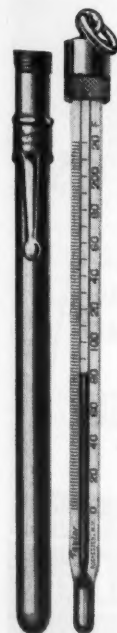
SUPERIOR DESIGN of stainless steel plug and seat reduces wire drawing, insures longer life and tight shut-off. V-Ports do the throttling, protecting separate shut-off seat. Write for circular (a70).



THE POWERS REGULATOR CO., Skokie, Ill.

When inquiring check CP 6637 on handy form, pgs. 2-3

HANDY POCKET THERMOMETERS make your testing easy



BINOC* tubing, the optically-correct thermometer tubing, provides a wide angle of vision and high magnification... the column is easily visible... there are no confusing bore reflections. Available in many ranges, red liquid or mercury filled.

For full information about Taylor's complete line of precision quality laboratory instruments, write for **Catalog LN**. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Mercury filled, in non-sparking brass armor. Length $5\frac{1}{2}$ ". Ranges available: minus 30 to + 120°F and 0 to 220°F. In 2° divisions.

Red liquid or mercury filled, complete with metal pocket case. Just $5\frac{1}{2}$ " long. Made in variety of ranges and 1° or 2° divisions to meet all requirements.

*Reg. U. S. Pat. Off.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 6638 on handy form, pgs. 2-3

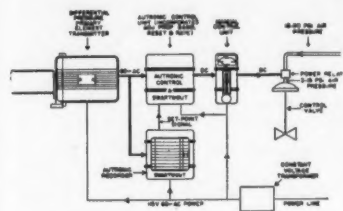
DECEMBER, 1952

INSTRUMENTATION

volts of 60 cps AC for either differential pressure range.

Description: This is another unit designed for use with Autronic instruments. Installed at the point of measurement, the unit transmits electrical signal which is directly proportional to differential pressure. Response, for practical purposes, is instantaneous.

Signal is generated by a differential transformer. Armature of the transformer is actuated by linkage through a pressure seal



Differential pressure transmitter is designed for use with all-electronic systems

from a stainless diaphragm. Unit also incorporates a spring for zero adjustment, and linkage-ratio adjustment for coarse span. Fine span adjustment is made electrically — does not alter zero.

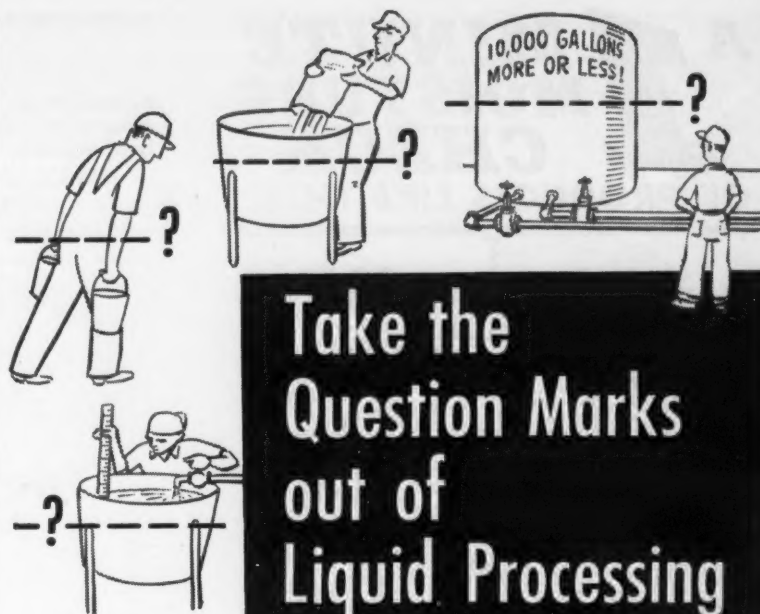
Compact unit measures $13 \times 6\frac{1}{2} \times 5\frac{3}{4}$ inches. Its net weight is 26 pounds.

(Type D2T Autronic Differential Pressure Transmitter is a development of The Swartwout Company, Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio... or for more information check CP 6639 on handy form, pages 2 and 3.)

Shows Instruments for reactor control

Sixteen-page catalog describes all types of radiation detection and control instruments. Included in contents are listings for nuclear reactor instruments, electronic instruments, Geiger and proportional counters, flow counters, neutron counters, and shields and safety devices.

Specifications and characteristics are listed for each unit. Cat 12 is issued by Dept. FP-11, Radiation Counter Laboratories, Inc., Dept. CP, 5122 W. Grove St., Skokie, Ill. When inquiring specify CP 6640 on handy form, pages 2 and 3.

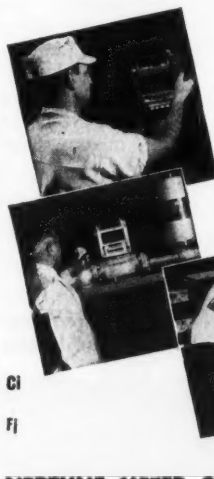


Take the Question Marks out of Liquid Processing

WITH *Accurate* NEPTUNE METERS

Why use wasteful methods of measurement when accuracy is so easy with Neptune meters? Fine-instrument precision gives you constant control over product quality at all times. No chance for human errors—the meters quickly pay for themselves by putting an end to spoiled batches, over-filling, spillage, etc. They save time, too, by eliminating slow weighing or batch tanks. Simple, easy to clean, they boost good house-keeping by keeping messy or hazardous liquids inside the pipe.

AUTOMATIC BATCH CONTROL



Ask to see the new Neptune "432" Auto-Stop—the meter that makes accurate batch mixing automatic. You simply push buttons to set the quantity of liquid required by the formula, open the valve, and the meter trips the valve shut at the right instant. It's just one of many types now available for handling more than a hundred different liquids. Composition bronze. Easy to read, easy to operate, easy to calibrate, and easy to service with interchangeable parts. For quick facts, just phone or write.

NEPTUNE METERS for 100 Industrial Liquids

NEPTUNE METER COMPANY

50 West 50th Street • New York 20, N. Y.

Branch Offices

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When inquiring check CP 6641 on handy form, pgs. 2-3

A 1 MINUTE MOISTURE CHECK OF PRODUCTS LIKE THESE

SUGAR

TOBACCO

CITRUS PULP

CEREAL

STARCH

WOOD WASTE

SOAP

FLOUR

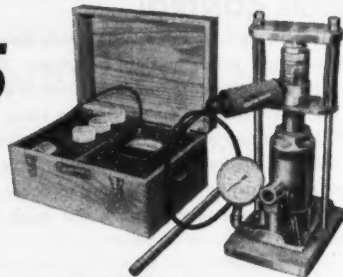
PAINT
PIGMENT

DRIED EGGS

POWDER
CHEMICAL

FEEDS

WITH MOISTURE REGISTER'S
NEW
G5



GIVES YOU POSITIVE CONTROL OF THE
QUALITY
IN YOUR PRODUCT

WRITE FOR BROCHURE. Free four page colored brochure is available with complete details on MODEL G5 MOISTURE REGISTER. Address MOISTURE REGISTER COMPANY, 1510 West Chestnut Street, Alhambra, California. Dept. CP-4.

**ELECTRONIC
MOISTURE REGISTER**

MOISTURE REGISTER TESTING EQUIPMENT IS
THE STANDARD IN MOISTURE TESTING FOR ALL INDUSTRIES.

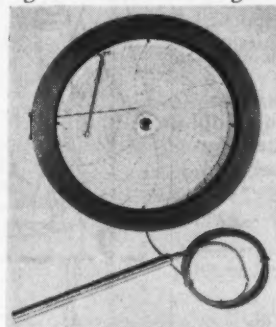
When inquiring check CP 6642 on handy form, pgs. 2-3

INSTRUMENTATION

**Direct-acting, temp instruments
indicate or record sub-zero
temperatures . . .**

spiral Bourdon tube is heart of instruments with composite range from -200 to +200°F

Indicating and recording thermometers are designed to cover range from -200 to 200°F.



Sensing bulb is 11 x 3/4" diam

feet of stainless steel armoured tube.

Model PD indicator is available with dial 6 or 8 inches in diameter. Except for clock, this instrument is similar in design to recording unit. Six scales within the composite range are produced.

(Models NR and PD Temperature Instruments are products of The Dickson Company, Dept. CP, 7420 S. Woodlawn Ave., Chicago 19, Ill. . . or for more information check CP 6643 on handy form, pages 2 and 3.)

Automatic voltage stabilizers from 15 to 5000 v-amp

Automatic voltage stabilizers ranging from 15 to 5000 volt amperes are described in 12-page bulletin. Booklet contains photographs and diagrams of the equipment, explains operation principles and construction, and gives complete specifications. Causes and effects of voltage variations are discussed. Typical applications for stabilizers are illustrated and described. Numerous charts and tables are contained in bulletin.

Bul GEA-5754 is issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6644 on handy form, pages 2 and 3.

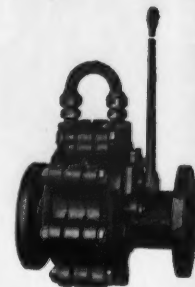
Compactness, installation savings offered in chemical feed system

Uses: For a wide variety of chemical feeding operations.

Features: Simplicity and compactness are provided in "packaged" system. Field piping is reduced and considerable savings effected in installation time and space.

Description: Feed system consists of a 50-to-500-gallon carbon steel chemical solution tank mounted over Milton Roy Controlled Volume Pump. Piping is supplied for suction line, complete with valves

Valves That Keep VISCOUS MATERIALS Flowing Freely



When you handle coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures, you won't be troubled with clogged valves if you use EVERLASTING Steam Jacketed Valves. The ample jacket space of these valves surrounds the ports as well as the body . . .

provides extensive heating surface and correct temperature to insure fluidity. Besides, the design of the valves is quick acting . . . non-wedging . . . and self-grinding . . . and they have the straight-through flow and lasting tightness that have made EVERLASTING Valves famous for over 40 years. Write for complete information.

EVERLASTING VALVE CO., 49 Fisk Street, Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

Everlasting Valves for everlasting protection

When inquiring check CP 6645 on handy form, pgs. 2-3

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

LIQUIDOMETER

"LIQUIDS WORTH STORING ARE WORTH MEASURING" WITH A LIQUIDOMETER Tank Gauge

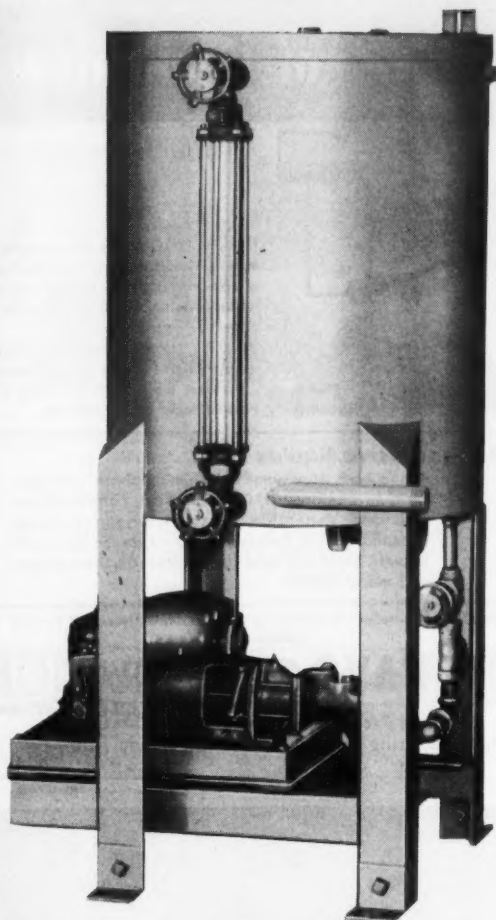
WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP

38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 6646 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Field piping is minimized in chemical feed system

and sight gage for reading liquid level. Accessory equipment, including agitators, dissolving baskets, electrodes, relays, and other items are available.

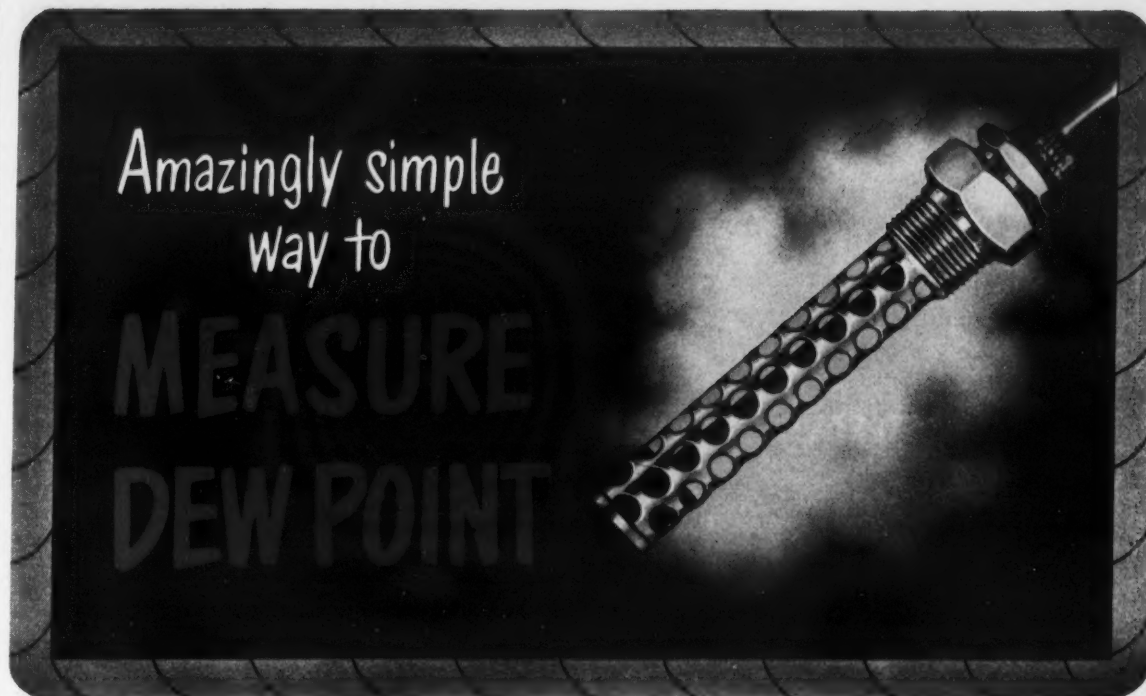
Manufacturer's controlled volume pumps can be obtained in either Simplex or Duplex models, air-powered or motor-driven. They are produced in 10 types of metal, all designed for specific chemical services. Pump capacities range up to 300 gph and operate against pressures up to 5000 psi.

(Product of Milton Roy Co., Dept. CP, 1354 E. Mermaid Lane, Philadelphia 18, Pa. . . or for more data check CP 6647 on form, pages 2 and 3.)

Outlines specifications, features of thermometer-controllers

Four-page bulletin discusses pneumatic control thermometers which are furnished as indicating controllers and 1- or 2-pen recording controllers.

General specifications, features, and construction of units are described in detail. Bul 612 is issued by Station 64, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6648 on form, pgs. 2 & 3.



directly . . . accurately . . . continuously

Now you can measure or control the humidity content of air or process gases with simplicity and accuracy never before obtainable!

An entirely new-type humidity-sensitive element, the exclusive Foxboro Dewcel*, opens many new possibilities for product improvement in industry. Coupled with a Foxboro Recorder or Controller, the Dewcel offers these outstanding advantages:

1. Direct recording in dew point temperature, at existing pressure.
2. Wide working range — even operates at sub-zero temperatures.
3. Neither adds nor removes water from atmosphere.
4. No water box or circulation of air required.
5. Simplicity that eliminates maintenance.
6. Sustained accuracy within 1°F. to 2°F.
7. Initial and operating economy.

Investigate Foxboro Dew Point Control for your process. In successful use in nuclear fission, pharmaceutical, food and chemical plants, distilleries, photo film production, drying and storage operations. Write for Bulletin 407. The Foxboro Company, 8112 Neponset Ave., Foxboro, Mass., U.S.A.



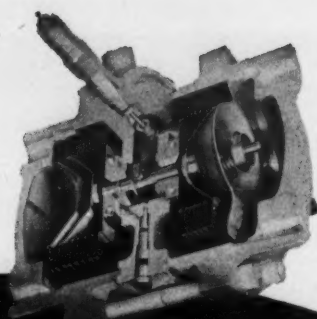
The Dewcel element is a thermometer bulb (liquid-filled or electric-resistance type) jacketed with lithium-chloride-impregnated woven glass tape. Over this are wound two spaced wires connected to an AC source. The lithium chloride absorbs moisture, allowing current to flow, generating heat, and raising the temperature. Equilibrium temperature is reached when vapor-pressure of the moist salt exactly balances that of the surrounding air or gas. The System translates this temperature into direct readings of dew point.

Thus, Foxboro Dew Point Instruments give direct readings or control of dew point from —50°F. to 142°F. at working temperatures from —40°F. to 220°F. Readings easily converted to absolute or relative humidity.

*Trade Mark

FOXBORO INSTRUMENTS
 FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check CP 6649 on handy form, pgs. 2-3



MORE COST-SAVING ADVANTAGES

with

BARTON FLOWMETERS

The important difference lies in
BARTON'S PATENTED*

DUAL RUPTURE-PROOF BELLOW'S PRINCIPLE

The Barton patented* Meter Body (see cutaway) eliminates all the principal sources of costly and troublesome flow measurement problems. You can throw away your mercury type meters...*actually* save money by installing Barton Flowmeters.

Barton dual stainless steel bellows are rupture-proof. Over-range damage is eliminated. The Barton actuating element is more compact and rugged, yet highly sensitive, insuring a long life of sustained accuracy with response that is virtually instantaneous.

Pulsation dampener, adjustable externally, controls rapidity of instrument response, eliminates pen flutter. Torque tube drive insures absence of leakage and friction for life of the meter, providing permanently a high degree of accuracy and sensitivity. The meter is completely self-draining or venting, eliminating the need for seal pots when measuring wet gases.

Thousands of Barton instruments are now employed throughout industry, solving measurement problems by combining top performance with cost-cutting efficiency. Write for complete information today...request Barton Bulletin 11C-4.

for measuring

FLOW • LIQUID LEVEL • DIFFERENTIAL PRESSURE

*Pat. Nos. 2400048, 2500360, 2590324, other patents pending.

BARTON INSTRUMENT CORPORATION

1437 SO. EASTERN AVENUE, LOS ANGELES 22, CALIFORNIA

When inquiring check CP 6650 on handy form, pgs. 2-3

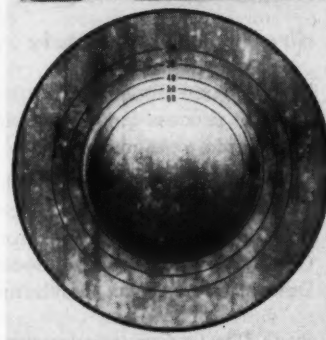
INSTRUMENTATION

Measure standard dent to spot hardness quickly...

reticulated microscope is accurate to $\pm 1\frac{1}{2}$ points Rockwell

Uses: For hardness test of steel alloys and other metals in the range from 25 to 65 Rockwell C.

Features: Portable pocket set can be used to determine hardness very quickly. It has the further advantage that bulky metal parts need not be moved to make a hardness test.

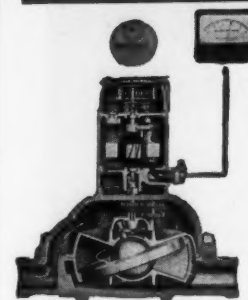


Description: An impact indenter drives a 1/16-inch tungsten carbide ball into the sample to be tested. Operator then measures diameter of the indentation with reticulated microscope. Typical view through the microscope is shown in illustration. Since diameter is a function of the hardness, graduated scale of the microscope indicates hardness directly. It is accurate to $\pm 1\frac{1}{2}$ points Rockwell C.

Portable tester of this type is particularly recommended where cumbersome metal parts are to be tested — structural steel, tanks and large pipes, etc.

(Portable Pocket Hardness Tester is a development of Pacific Transducer Corp., Dept. CP, 11921 West Pico Blvd., Los Angeles 64, Calif. . . or for more information check CP 6651 on handy form, pages 2 and 3.)

Remote indication and control of liquid flow



Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks. With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

for corrosive liquids

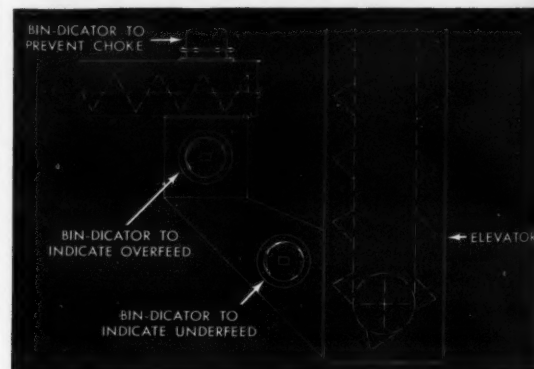
Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carboic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others

Send for a complete description of Hays Veriflow Meter and Veritrol.
Bulletin 48-766

THE HAYS CORPORATION

MICHIGAN CITY 12, INDIANA

When inquiring check CP 6652 on handy form, pgs. 2-3



CHOKE-UPS!

IN CONVEYORS and ELEVATOR LEGS

damage equipment—waste materials
cause lost time—start fires

**PREVENT SUCH LOSSES with
BIN-DICATOR, a diaphragm operated switch**

Free catalog describes applications,
gives details and dimensions of models
with numerous wiring diagrams.

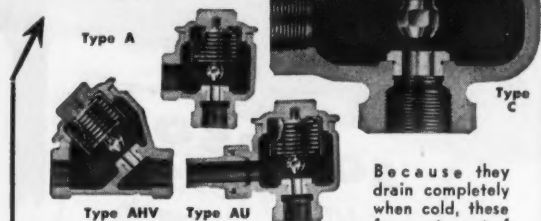
THE BIN-DICATOR COMPANY
13946-D Kercheval Avenue • Detroit 15, Michigan

When inquiring check CP 6653 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NICHOLSON MAKES FREEZE-PROOF Steam Traps

for Every Plant
Use



Because they drain completely when cold, these four types of

Nicholson steam traps are positively freeze-proof. Can be freely installed outdoors. Universally recommended for use in lines which need not be in continuous use during cold weather, because they are freeze-proof and because their 2 to 6 times average drainage capacity results in minimum heat-up time. The non-air-binding feature of Nicholson traps also notably facilitates heat transfer in severe weather. Sizes 1/4" to 2"; pressures from vacuum to 250 lbs.

BULLETIN 152

181 Oregon St.
Wilkes-Barre, Pa.

W. H. NICHOLSON & CO.
TRAPS · VALVES · FLOATS

When inquiring check CP 6654 on handy form, pgs. 2-3



NEW SLIDE CHART

gives you information on

- BENDING RADII
- COIL DIAMETERS

for Carpenter stainless
tubing and pipe from
3/8" to 5" O.D.

Just send us a note on your
company letterhead or re-
turn the coupon below
and your chart will be
mailed promptly.

THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N. J.

Please send me the Carpenter Bending & Coiling Slide Chart.

NAME _____ TITLE _____
(Please Print)

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

(Firm name and title must be on coupon)

When inquiring check CP 6655 on handy form, pgs. 2-3

INSTRUMENTATION

**Detects and measures very minute
quantities of many common
trace gases . . .**

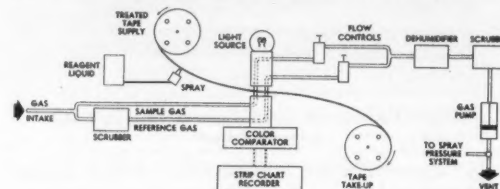
photoelectrically measures color change of treated
tape, used to record, indicate, warn

Uses: Detects and measures very minute traces
of almost all gases which can be measured by con-
ventional colorimetric laboratory methods.

Features: Operation is fully automatic, may be
tied into recording, indicating, or warning systems.
Instrument is extremely sensitive.

Description: Chemical-photoelectric analyzing in-
strument can detect many gases in quantities as small
as 0.5 micrograms per liter with full scale indication.
It is essentially an automatic color comparator. Op-
eration is based on color changes of a treated paper
tape produced by the gas in question. Photoelectric
measuring system is roughly ten times more sensitive
than the human eye.

As shown in schematic, unit consists of a gas intake
system, a reel of chemically treated tape, and the
comparator. Intake system draws in continuous sam-
ple which is split into two streams. Gas in question



Schematic of gas analyzer shows how sample passes
through tape at point of color comparison

is scrubbed from one stream before both streams are
passed on to the tape. Comparison is made between
color of tape due to reference gas and color due to
sample gas. Even at concentrations in the range of
1 ppm, changes in gas composition of order of 1%
are detectable.

Listed below are representative gases measurable with
this instrument:

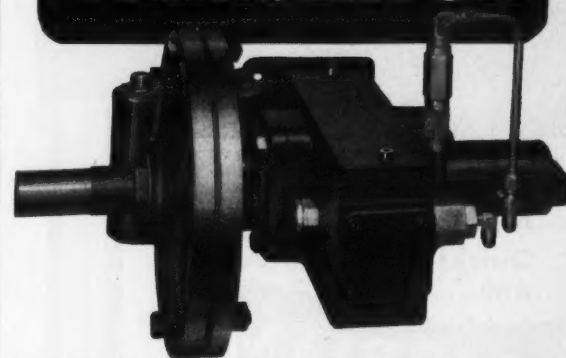
Gas or Vapor	Full Scale Sensitivity ($\mu\text{g}/\text{liter}$)
Acetone	10.0
Ammonia	1.0
Aniline	1.0
Arsine	0.02
Bromine	0.4
Carbon disulfide	1.0
Carbon monoxide	0.1
Chlorine	0.1
Hydrocyanic acid	0.1
Hydrofluoric acid	0.2
Hydrogen sulfide	0.1
Ozone	0.2
Phosphorus trichloride	0.2
Sulfur dioxide	0.1

Instrument operates in cycles whose length depends
on type of chemical interaction on the tape. In no
case does cycle dead time exceed ten seconds.

(Microsensor Gas Analyzer is a product of Vitro
Corporation of America, Dept. CP, 233 Broadway,
New York 7, N. Y. . . . or for more information
check CP 6656 on handy form, pages 2 and 3.)

Measure and transmit MICRO-PRESSURES with

THE ASKANIA PNEUMATIC TRANSLATOR



If you have an application that calls for trans-
mitting low static or differential pressures, the
Askania Pneumatic Translator is the answer to
your problem.

A low-pressure amplifier, it measures a pressure
signal of comparatively low level (0-1.0 w.c. or
higher) and transmits an air signal or output pres-
sure at a higher level . . . usually standard instru-
ment range of 3-15 p.s.i.

Check these advantages and features of the
PNEUMATIC TRANSLATOR:

Accurate . . . Proportioning is within 0.5% of maxi-
mum at all ranges.

Neoprene-impregnated Diaphragms . . . For
most services diaphragms are made of fine gauge
synthetic fibre fabric impregnated with Neoprene.
This combines greatest responsiveness with resist-
ance to heat, cold, most chemical actions and
mechanical flexing.

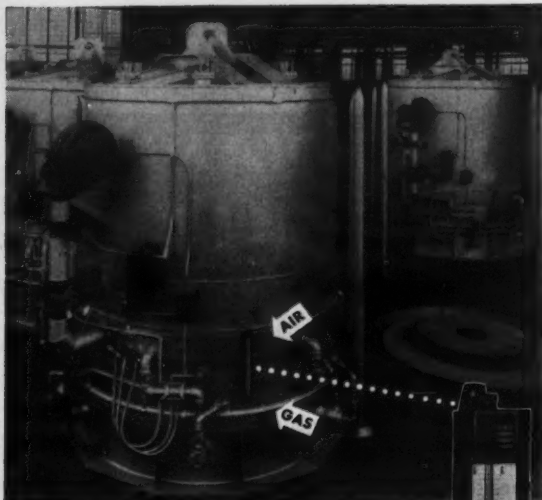
No mercury . . . Diaphragm measurement of flow
or liquid level eliminates need for seal pots, and
other trouble sources associated with mercury
manometers.

Hazard insurance . . . Askania Pneumatic Trans-
lators keep hazardous gases and liquids well away
from the control panel, while providing fast accu-
rate measurement.

For additional details, ask for Bulletin 154.

ASKANIA
REGULATOR COMPANY
240 E. Ontario Street, Chicago 11, Illinois
Subsidiary of General Precision Equipment Corp.

When inquiring check CP 6657 on handy form, pgs. 2-3



Cell annealing furnaces and bases supplied by the Lee Wilson Engineering Co., Inc. of Cleveland, Ohio. Equipped with Meriam Well Type Manometers.

Air-Gas Pressure Ratio Quickly Determined with . . .

**MERIAM
MANOMETERS**

A manometer is connected with both the gas pipe and the air channel which encircle the furnace. Pet cocks in the connecting lines permit shutoff so that the operator can read gas pressure and air pressure alternately—and thus quickly determine the air-gas header pressure ratio.

This Meriam Well Type Manometer is *direct reading*. Saves time—no additions—prevents errors. The instrument is remarkably simple, yet thoroughly sensitive and accurate in its readings. Meriam Manometers are widely used in industrial plants and laboratories for measuring pressures and vacuums of practically all kinds of liquids and gases. Send for complete information.

THE MERIAM INSTRUMENT CO.
10940 MADISON AVENUE • CLEVELAND 2, OHIO
WESTERN DIVISION: 4760 E. OLYMPIC BLVD., LOS ANGELES 22, CALIF.
IN CANADA: PEACOCK BROS., LTD., MONTREAL

MERIAM ★
★ *Instruments*
ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 6658 on handy form, pgs. 2-3

INSTRUMENTATION

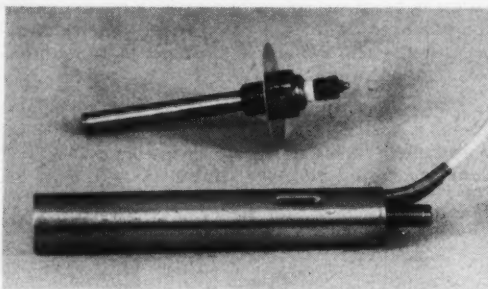
Switches one ampere load on or off when temp changes 0.1°F . . .

midget temperature switch, only 1/4-inch in diameter, factory adjusted for -50 to 450°F

Uses: Redesigned thermostatic switch can be used for precision on and off temperature control or over-heat detection with solids, liquids, or gases. It is factory set for any point in the -50 to 450°F range.

Features: Despite its small size (outside diameter of sensitive shell is only 1/4 inch) switch handles one ampere at 48 volts AC or 32 volts DC.

Description: Midget Thermoswitch shown in photo is an inverse compression type — contacts close with temperature rise. It has a nameplate of



Midget thermostatic switch (upper) compared with conventional unit

1-1/4" diameter which is removable. Switch mounts by means of 1/8" (27 thread) threaded section shown at right. Photograph compares midget switch with a standard model.

Overall length of the unit is 3-5/32" with a temperature-sensitive length of almost 2". Shell is of stainless steel. Other models of midget Thermoswitch will soon be produced with both regular and inverse contact arrangements.

(Midget Thermoswitch is a development of Fenwal, Inc., Dept. CP, Ashland, Mass. . . . or for more information check CP 6659 on handy form, pages 2 and 3.)

Ups accuracy of flow meter, measures low frequencies for other uses . . .

frequency meter has range from 5 to 100 cps with pulses of 1 millivolt or more

Uses: Indicates low frequencies with accuracy of plus or minus 0.5% of full scale. Designed primarily for use with flowmeters where frequency or pulse rate is proportional to flow, and it may also be used as a tachometer, frequency deviation meter, or in any application where low frequencies must be accurately measured.

Features: Signal pulses need only be 1 millivolt in amplitude.

Description: Frequency indicators are available with ranges from 5 to 100 cycles per second and higher. Accuracy of each instrument is plus or minus 0.5% of full scale. Internal frequency reference is built in so that system can be con-



Jam-packed with cost-cutting, efficiency-boosting characteristics, the Johnson Joint offers exciting possibilities you should know about. It's a packless, self-lubricating and self-adjusting way to get heating or cooling agents in or out of rotating machine parts; used on calenders, dryers, ironers, mills and similar machines. There are hundreds of design and production problems for which it holds the perfect answer.

Write for complete literature



The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 6660 on handy form, pgs. 2-3



LIQUID LEVEL and INDUSTRIAL CONTROLS

—Write for Catalog—

B/W CONTROLLER CORPORATION

2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 6661 on handy form, pgs. 2-3

CHEMICAL PROCESSING

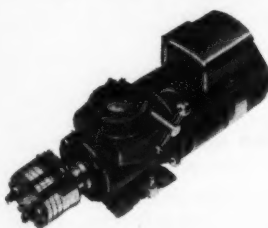
veniently standardized. Standardizing control knob and on-off switches are the sole controls of this instrument.

Though the instrument was developed for the Navy for flowmetering, it can be used to measure any frequency in the audio range directly. By using frequency dividers it will also measure much higher frequencies. Simple photoelectric or magnetic pick-ups enable it to measure rotational speed, or any similar function. Output of the instrument is a DC signal suitable for use with standard indicating, controlling, recording, or alarm systems.

(Northam Frequency Computer is manufactured by North American Instruments, Inc., Dept. CP, 3445 Cahuenga Blvd., Los Angeles 28, Calif. . . or for more information check CP 6662 on handy form, pages 2 and 3.)

Wide line of viscous, non-viscous fluids handled at 0—3.6 gpm steady flow rate . . .

no contamination, easy disassembly for cleaning are construction features of pump



Viscous and non-viscous fluids flow through smoothly

Uses: For pumping of hot or cold viscous or non-viscous liquids, compounds, and fluid chemicals.

Features: Line capacities range from 0 to 3.6 gpm, and with smooth, continuous flow. Simple design permits easy disassembly for

cleaning and sterilizing. Pumps are non-pyrogenic, remain sterile while dispensing sterile liquids, and they resist corrosion and chemical reaction without contamination.

Description: Maisch industrial metering pumps have stainless steel pump heads, are in two styles of mounting — rigid, and quick-demountable. Both are adaptable to fixed speed transmissions and variable speed drives. Dispensing starts and stops instantaneously through the completely sealed system in response to the driving motor. A check valve prevents dripping. Output of variable speed unit is instantly adjustable while pump is operating.

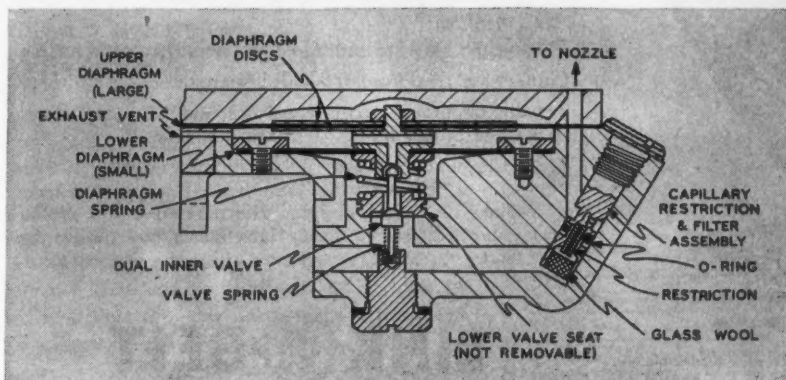
Rotary seals for working pressures to 15 psi are standard equipment on Maisch industrial pumps. Interchangeable seals for pressures to 40 psi can also be supplied. Explosion-proof motors can be adapted to all standard pump heads and to variable speed transmissions. Special external seal for the pump drive shaft effectively prevents contamination within the pump from outside sources.

(Development of Central Scientific Company, Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. . . or for more information check CP 6663 on handy form, pages 2 and 3.)

A Superior Controller must have a Superior Relay

you get it in the

P-4 PNEUMATROL Pneumatic Controller



HOW IT WORKS: When flapper is moved against nozzle by measuring system, pressure increases on top of large diaphragm. Floating exhaust seat moves downward pushing lower or inlet valve open increasing pressure in output circuit and under small diaphragm until balance of forces closes the valve. Conversely when nozzle is vented, the diaphragm system moves upward to open exhaust valve, reducing pressure in output circuit until equilibrium is again established.

The F&P FLOWRATOR meter was the first flow rate meter generally available to exhibit instantaneous response to flow rate change, leading to control problems that have been presented by current mechanical differential type flow transmitters.

Rapid response of the control valve is essential for stable control in a system which changes rapidly. Since the control valve action depends upon the capacity of the relay supplying it with air, the requirement for a high capacity stable relay required solution. Consequently, the P-4 relay has been designed to be extremely fast without impairing its basic sensitivity due to hydrostatic unbalance. The P-4 relay utilizes tandem slack diaphragms which provide the multiple requirements of high capacity, low air consumption "on control", and freedom from all dead zone. Write now for Catalog C-50.

9 POSITIVE BENEFITS

Versatility—one relay fits transmitter, and all case and point-of-measurement controllers.

Integral unit—permits fool-proof construction without tubing connections.

High capacity—essential for best in flow control.

Rated capacity—2 cfm @ 1 psi drop.

Capacity fully usable—transfer switch ports and connectors match relay high capacity.

High force—friction ratio—large diaphragm area produces maximum sensitivity.

Amplification—4:1 pressure multiplication of tandem diaphragms permits low nozzle pressure, low reaction pilot system.

Protected Pilot—integral filter assembly features stainless steel restriction and nozzle.

Non-bleed—no dead zone assured by tandem diaphragm and floating exhaust seat construction.

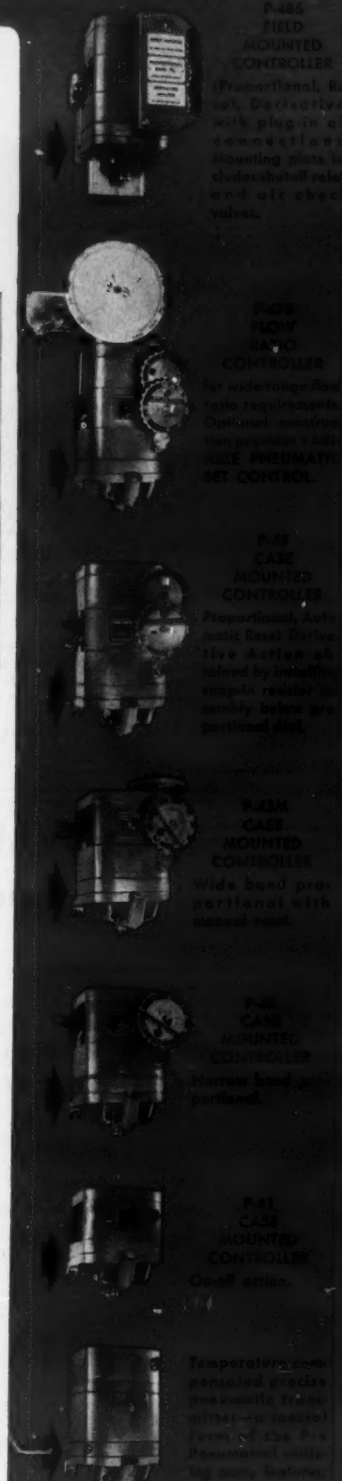
Materials—aluminum die cast body with brass insert, neoprene diaphragms. Trim, springs and screws of stainless steel.

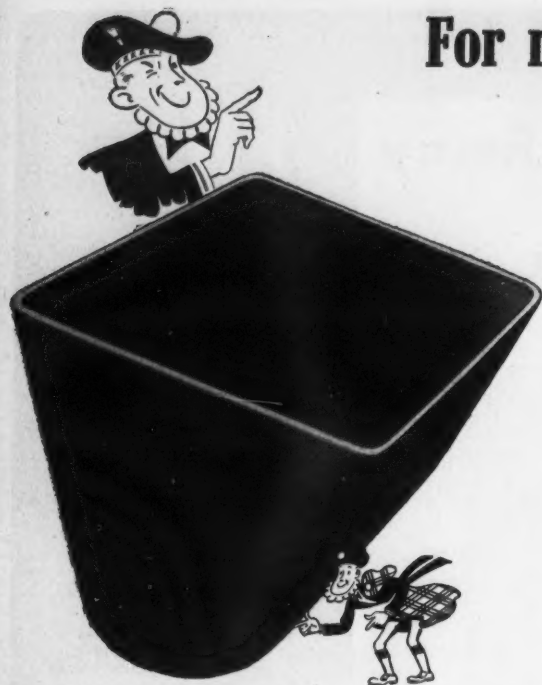


FISCHER & PORTER CO.

420 County Line Road, Hatboro, Penna.

When inquiring check CP 6664 on handy form, pgs. 2-3





For rugged, 3-shift service . . . specify LINK-BELT Cast Buckets

You get extra dividends in longer life with Link-Belt Cast Buckets —

- Abrasion, corrosion and tough usage meet their match in top-grade Link-Belt malleable iron or Promal (the stronger, longer-wearing metal).
- Friction and wear are minimized by smooth, seamless surface.
- Corners are reinforced for added strength.

Equally important, accurate balance and advanced design give you the proper filling . . . clean discharge.

Link-Belt builds all sizes in six different styles . . . for either chain or belt mounting. Complete L-B line also includes steel buckets of various designs. The next time you replace your elevator buckets, call your Link-Belt representative for all the facts.

LINK-BELT
CAST ELEVATOR BUCKETS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities. 12,518

When inquiring check CP 6665 on handy form, pgs. 2-3

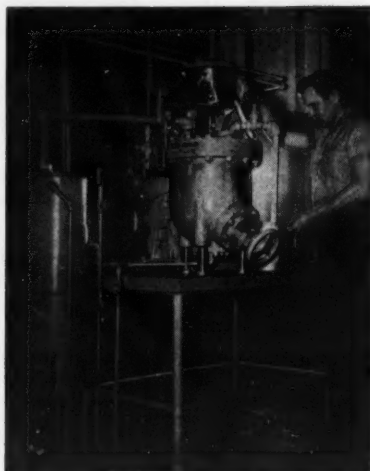
BUFLOVAK-DOPP PROCESSING KETTLES Efficiently Serve Many Industries

YOUR product can be processed in this Dopp Kettle that is installed in the BUFLOVAK Research and Testing Laboratory.

Larger equipment is also available.

Results are positive because they are conducted on a pilot plant scale.

Write for particulars.



BUFLOVAK-DOPP Processing Kettles are used for thorough mixing of a wide range of chemical and food products.

Performance records show considerable savings in steam, power and operating time.

Exclusive features in design and construction assure uniform mixing, heating and cooling. The result is a better, more uniform product, produced at lower cost!

Complete details upon request.

BUFLOVAK EQUIPMENT DIVISION
of BLAW-KNOX COMPANY
1645 Fillmore Ave. Buffalo 11, N. Y.

When inquiring check CP 6666 on handy form, pgs. 2-3

Briefs . . .

Stabilization of chlorinated polyvinyl polymers

Discussion is pertinent to the use of these materials in protective coatings. Stabilization problem is complex due to the wide variation in the structure of commercial vinyl chloride polymers. Effect of resin structure on processing and degradation is considered along with basic causes of deterioration. Effects of commercial stabilizers on the heat stability of poly-vinyl chloride and on vinyl chloride — vinyl acetate copolymers are determined and tabulated. Similar studies as to light stability made and tabulated. 6 pages, 5 figures, 4 tables. ("Paint and Varnish Production," October 1952, page 18)

Cooling tower performance analyzed

Author presents a new concept making it possible to predict performance ratings of proposed towers while they are in design stage. Several examples show how calculations are made. 7 pages, 3 tables, 5 figures. ("Petroleum Refiner," October 1952, page 97)

Evaluation of extraction rate measurements

Author states objectives are to present an empirical method of evaluating rate constants from residual oil content time data; to determine the mechanism of vegetable seed extraction by comparing data with that from porous plates in which the process is one of molecular diffusion; and to re-examine the effect of variables on extraction rate. Variables were thickness of material, temperature, kind of solvent, per cent moisture in material, and kind of material. 4 pages, 4 figures, 1 table. ("Journal of American Oil Chemists' Society," October 1952, page 421)

Solution of some common floor problems

Article gives information on how various kinds of deteriorated floors may be put back in usable condition. Some cost figures on comparative basis are included. 2 pages, 4 figures, 3 photos. ("Flow," October 1952, page 77.)

Sugar cane bagasse in paper and pulp industry

Due to current articles in the daily press and in some technical journals, this is a timely paper. Author reviews past history of bagasse as a pulp source; cites many attempts to make it an economic

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

material. States that unquestionably good paper can be made from bagasse. To date no one has shown how paper and money both can be made from bagasse alone. Reasons for this are given and difficulties to be overcome are pointed out. "In spite of the great publicity given to the use of bagasse for newsprint, production of this particular product from bagasse seems to be at the bottom of the list so far as economic feasibility is concerned." 7 pages. ("Paper Trade Journal," October 17, 1952, page 24)

Economics of developing agricultural chemicals

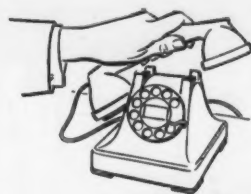
Author comments on the procedure involved in the development of an agricultural chemical from the time it is synthesized in the laboratory until it has been accepted in crop production. Various development costs are tabulated. Estimates are given on number of compounds tested and on number which are sold successfully. 3 1/2 pages, 3 tables. ("Agricultural Chemicals," September 1952, page 32.)

Production of methane from coal

Anticipating the time when natural gas will be in short supply in an open market, the authors have made this economic study. Process from coal to purified gas is depicted in a schematic drawing. Gas composition at various stages tabulated, final product compared with pipe line gas. Utilities required are tabulated and commented on. Investment costs are detailed, summarized, and finally stated in terms of cost per MSCF. Fuel cost is a very appreciable part of total; costs estimated for a low and a high fuel cost. Tabular material also summarizes investment and depreciation costs. 7 pages, 11 tables, 3 figures. ("Chemical Engineering Progress," October 1952, page 486)

Identification of thiophene and benzene homologs

A new method for the identification of the unknown organic compound has been developed, is described and is exemplified by the identification of two thiophenes isolated from Colorado shale oil naphtha. 3 pages, 2 tables. ("Analytical Chemistry," September, 1952, page 1391)



Easy to Order! . . .

. . . Quick and Easy to Install!



Grinnell Welding Fittings

Any qualified welder can make welds quickly and easily with Grinnell welding fittings. These fittings are made by a hydraulic forging process that assures uniform wall thickness at all points and true circularity throughout. Of seamless, one-piece construction, they can be cut at any angle to match up with standard weight, extra strong and heavier wall pipe in I.D. or O.D. sizes. Pressure-temperature ratings are equal to or greater than those of seamless steel pipe. Grinnell welding fittings are process stress-relieved.

Full data on the complete line of Grinnell seamless carbon steel welding fittings and forged steel flanges is contained in the Grinnell Welding Fittings catalog. Send for a copy.

GRINNELL

WHENEVER PIPING IS INVOLVED

RANGE OF TYPES AND SIZES

Description	Standard Weight	Extra Strong	Schedule 160	Double Extra Strong	Light Gauge Nominal Pipe Size	Iron Pipe Size
ELBOWS						
90° Long Radius	1/2"-30"	1/2"-30"	1"-12"	3/4"-8"	4"-24"	3/4"-12"
90° Long Tangent	1 1/2"-12"	1 1/2"-12"	.....	.....	.....	.....
90° Reducing	2"x3/4" to 6"x5"	.....	.....	.....	.....	.....
90° Short Radius	1"-30"	1 1/2"-30"	.....	.....	.....	.....
45° Long Radius	1/2"-30"	3/4"-30"	1"-12"	3/4"-8"	4"-24"	3/4"-12"
RETURNS						
180° Long Radius	1/2"-30"	1/2"-30"	1"-12"	2"-8"	4"-24"	3/4"-12"
180° Short Radius	1"-30"	1 1/2"-30"	.....	.....	.....	.....
180° Ex. Long Radius	1"-2 1/2"	1"-2 1/2"	.....	.....	.....	.....
TEES — Straight	1/2"-24"	1/2"-24"	1/2"-12"	1/2"-8"	.....	.....
Reducing Outlet	1/2"-24"	1/2"-24"	1/2"-12"	1/2"-8"	.....	.....
REDUCERS Concentric & Eccentric	3/4"-24"	3/4"-24"	3/4"-12"	3/4"-8"	.....	.....
CAPS	3/4"-24"	3/4"-24"	1"-12"	1"-8"	.....	.....
STUB ENDS — Lap Joint	1/2"-24"	1/2"-24"	.....	.....	.....	.....
SADDLES	2"-24"		.....	.....	.....	.....
LATERALS — Straight	1 1/4"-24"	1 1/4"-24"	.....	.....	.....	.....
Reducing	1 1/4"-24"	1 1/4"-24"	.....	.....	.....	.....
CROSSES — Straight	1 1/4"-24"	1 1/4"-24"	.....	.....	.....	.....
Reducing	1 1/4"-24"	1 1/4"-24"	.....	.....	.....	.....
BACKING RINGS	2"-24"	2"-24"	.....	.....	.....	.....

Also available in certain sizes are: 90° long and short radius elbows, 45° long radius elbows and 180° long and short radius returns in Schedules 30, 40, 60 and 80.

Grinnell welding fittings and flanges conform to applicable ASA and ASTM Standards.

GRINNELL WELDING FITTINGS ARE QUALITY-CONTROLLED FOR DEPENDABILITY



TRUE CIRCULAR SECTION

True circular section at all points makes a Grinnell fitting easy to align and weld . . . there is no distortion or no flattening to affect flow adversely.



FULL EFFECTIVE RADIUS

The loss of pressure through Grinnell welding elbows is held down to an absolute minimum . . . because of the full and the effective sweep of the radius.



SMOOTH, CLEAN INSIDE SURFACE

Grinnell Fittings have uniformly smooth inner walls . . . no waves or ridges to cause turbulence or accelerate erosion or corrosion. No pockets to trap solids.



EASY, SWEEPING TURNS

In Grinnell welding tees, corners where outlet joins the run are well-rounded and perfectly smooth to minimize resistance to flow and to prevent trapping.



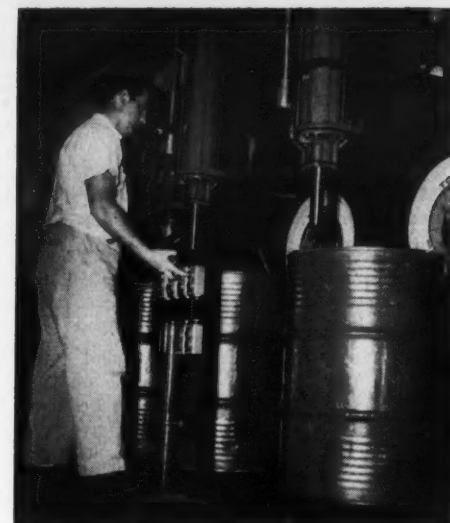
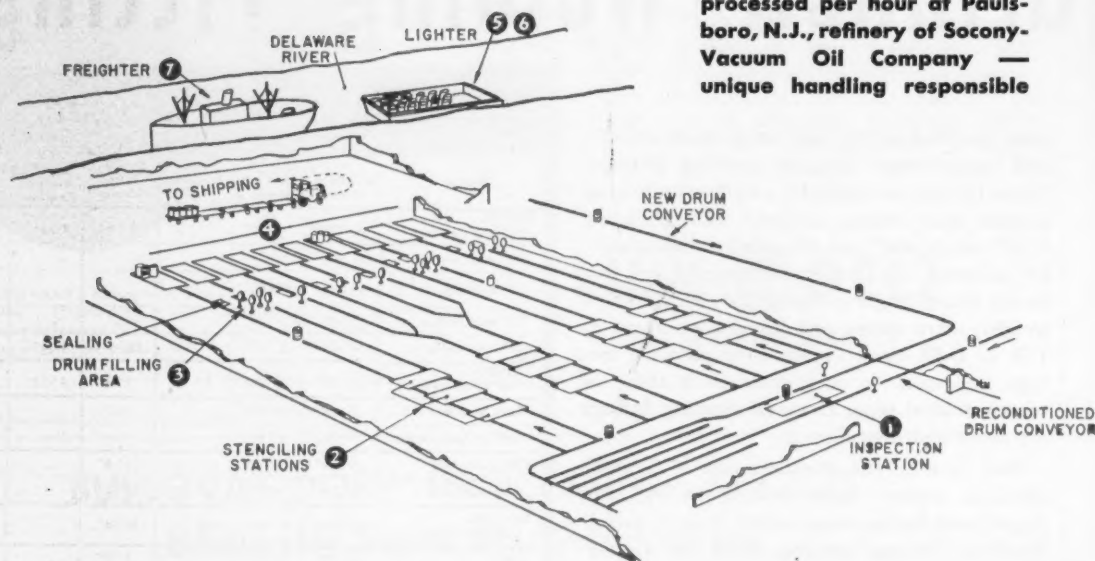
Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

When inquiring check CP 6667 on handy form, pgs. 2-3

Drums remain in upright position from storage, through filling, to shipping

600 55-gal drums can be processed per hour at Paulsboro, N.J., refinery of Socony-Vacuum Oil Company — unique handling responsible

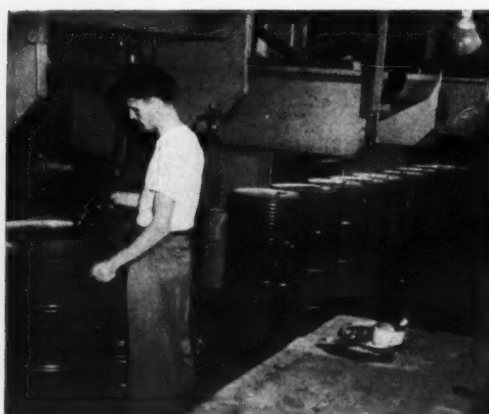


● DRUM FILLING — A very unique system of sub-surface filling of drums (developed by Socony-Vacuum Oil Company's Paulsboro, N.J., engineering and operating personnel) is illustrated here. Filling speeds as high as 120 drums per hour per line have been attained, with an error of fill not more than $\frac{1}{4}$ of 1% of weight. Filling cycle is as follows:

Operator positions two drums under the twin filling nozzles and presses a button. Scales, previously set for weight to be delivered, automatically tare each drum. Next, nozzles rapidly insert themselves into the drums to a depth just short of the bottom. As lubricant flows under pressure, nozzle tips rise gradually, keeping just below the surface to prevent frothing. Scale mechanism (compensated for filling at 60°F) stops flow of product at pre-set delivery (55-gal, for instance). Nozzles withdraw themselves from drum, and a vacuum at their tips removes the last drip of product to prevent spillage. While two drums are filling, operator tightens and seals bungs of two drums just filled



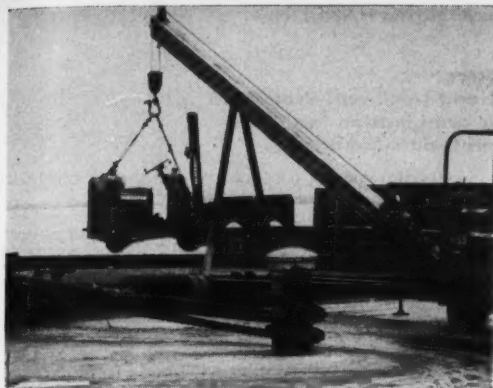
● DRUM INSPECTION — Upright drums (new and reconditioned) are arriving at inspection station on live roller conveyor, box cars, trucks, or warehouse that stores 30,000 drums. Inspectors apply and seal $\frac{3}{4}$ " bungs, thrust inspection light into large end bungs to view interiors, insert large bung finger-tight, and finally chalk tare weight on each drum



● DRUM STENCILING — After drums leave inspection station, they pass through these stenciling booths where corporate signature, brand name and grade, gross and net weights, and port markings are applied. Spray paint guns and brass stencils are used in this operation

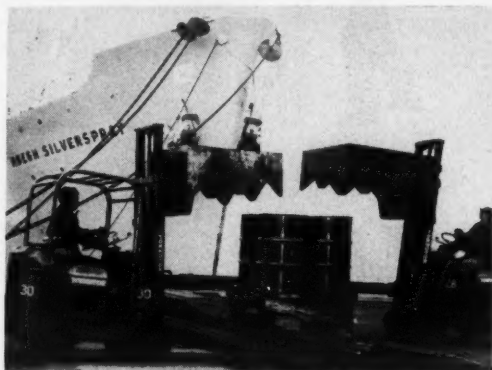


● HANDLING OF FILLED DRUMS — Live roller conveyors with switches are positioning filled drums in groups of four. Trucks and attachments are picking up groups of four drums and placing them on trailer trains that will take drums, upright position, to points of shipping by truck, box car, ship and lighter



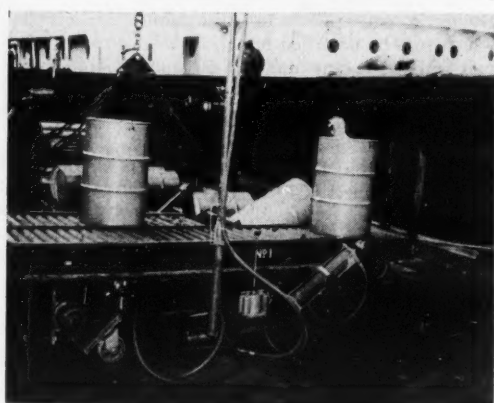
● PREPARATIONS FOR LOADING LIGHTER —

Level variations between lighters alongside docks caused by tide in Delaware River prevents drum-laden trucks from smoothly traveling the gap between docks and lighter. Socony-Vacuum built this rig in order to place a truck onto lighter to receive drums from dock, and then position them on lighter



● DRUM EXCHANGE BETWEEN DOCK AND LIGHTER —

Truck on dock has just positioned four drums for pick-up by truck on lighter. Note drums are still in upright position

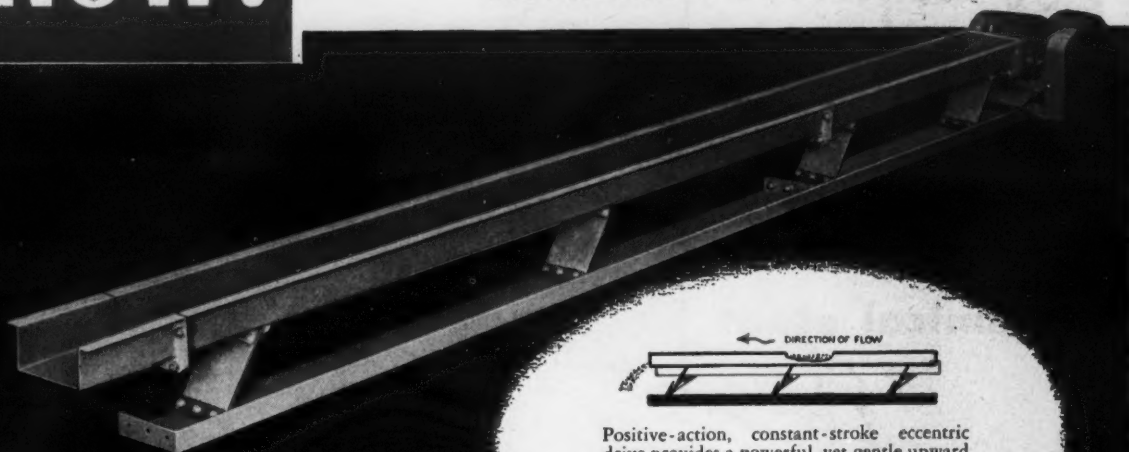


● DRUM DOWN-ENDER FOR SHIP LOADING

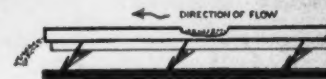
— Note that until now, drums have been in upright position. Slings that load drums into the holds of ships require positioning drums in down-ended fashion. Personnel at Socony-Vacuum have designed this unique, movable pneumatic device

NOW!

FLEXMOUNT Oscillating Conveyors available from stock



FLEXMOUNT is built in 8, 12, and 18 in. widths, any length. For greater capacities, Link-Belt has heavy-duty designs.



Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Natural spring action of resilient legs reduces power requirements to a minimum.

Stock Sections Make Flexmount Positive-Action Oscillating Conveyors—Easy to Order—Easy to Install

HERE's a big step forward in cutting conveying costs. Link-Belt can now offer you its FLEXMOUNT positive-action oscillating conveyors from stock for immediate delivery.

Stock sections of 8, 12, and 18 in. widths in any length, make ordering easy. Because production-line techniques are used in manufacture, easy-to-install FLEXMOUNT assures low over-all costs.

Uniform, continuous movement of materials and long life are two operating advantages of the Link-Belt FLEXMOUNT. Others include its leak-proof trough, compactness and low maintenance costs. As for versatility—you can build up any length desired in the field from stock sections... up to 100 ft. drive with a single motor... install dividers to convey two or more materials simultaneously without mixing.

Easy-to-clean FLEXMOUNT Conveyors can be made dust-tight by the simple addition of a metal cover. For complete information, send for new Book 2478.



Completely enclosed Link-Belt FLEXMOUNT Oscillating Conveyor moves material at temperatures up to 1500° F at 4000 lbs. per hr.

LINK-BELT

FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

AN INVITATION TO PROCESSORS WITH CONVEYING PROBLEMS...

Link-Belt test units and laboratory facilities are available for your use. Our engineers will be glad to demonstrate how FLEXMOUNT Oscillating Conveyors can serve your requirements. This versatile conveyor is often used to cool or dry material being conveyed.

When inquiring check CP 6668 on handy form, pgs. 2-3

*A regular
"busybody"*
around your
chemical plant

Sticks Its Nose into Any Material-Handling and Excavating Work . . . And Gets the Job Done Fast



**Allis-
Chalmers
HD-5G**

1 cu. yd. Bucket,
40 drawbar hp.
Dumping Height
— 9 ft., 1/4 in.

Interchangeable attachments include: Special buckets — up to 2-yd . . . Bulldozers for excavating and backfilling . . . Crane Hook for heavy lifting . . . Lift Fork for handling palletized loads . . . Trench Hoe for footings, pipe — other trenching.

Fertilizer — Works right up on a big Stockpile

to eliminate overhang . . . and scoops out a full cubic yard at a pass with standard bucket. Only a crawler tractor gives you the traction you need to handle this tough digging . . . and only this A-C crawler gives you 2-speed reverse and 1,000-hour lubrication of truck wheels to protect your working time, increase output.

Coal — Stores, Compacts and Reclaims

This flexible unit can build stockpiles in any available

space. Ability to spread and pack coal in thin, horizontal layers eliminates flues — the main cause of spontaneous combustion. Standard track shoe eliminates coal breakage. As coal is needed, the HD-5G quickly loads from stockpile to trucks. On short hauls, it dozes or carries coal directly to plant.

Waste — Cleans Up and Loads

Out in the yard, this busy tractor cleans up and loads industrial waste, excavates, trenches and backfills on new construction, spots cars, clears snow . . . handles many other jobs winter and summer.

Send coupon for free literature describing this one-tractor fleet.



ALLIS-CHALMERS TRACTOR DIVISION
1125 South 70th St., Milwaukee 1, Wis.

Please send me literature on the Tracto-Shovel line:

☐ 1-yd. HD-5G ☐ 2-yd. HD-9G ☐ 3-yd. HD-15G ☐ 4-yd. HD-20G

Name

Title

Company

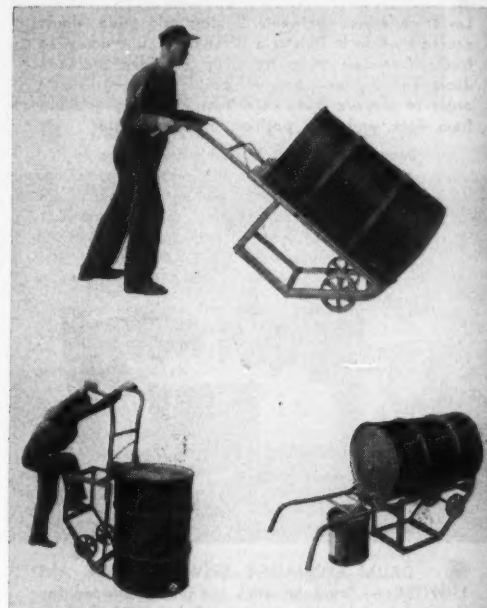
Address

MATERIAL HANDLING

Hand truck and drain rack is combination that aids materials handling . . .

handles detach to conserve space and one pair serves any number of trucks

Users of solvents, cutting oils, and detergents may utilize combination truck and drain rack to simplify handling drums or similar containers. Truck is loaded by tilting it against drum, sliding steel fingers down to engage top rim of drum, and then rocking truck back to wheeling position. Slight downward push on truck handles will raise wheels. Tilt carriage backward to convert to rack for draining.



Photograph shows loading (left), transporting (top), and draining functions

Device is equipped with steel tubing for handles, which may be detached to conserve floor space. One pair will serve any number of trucks. Iron frame is all-weld constructed with two eight-inch roller bearing wheels. It weighs approximately 90 pounds.

(Product of The Palmer-Shile Company, Dept. CP, 16016 Fullerton, Detroit 27, Mich. . . . or for more information check CP 6670 on handy form, pages 2 and 3.)

Fork truck lifts 2500 lb and can make U-turn in 8 1/2' aisle . . .

braking feature prevents burnouts due to sudden reversals of truck's motion

Electric fork truck will travel at speeds up to 7 mph with 2500 lb load and it's able to make a U-turn in 8 1/2 foot aisle space. Feature of truck is Dynamic Braking, which was built into Model FS-25 to prevent motor burnouts caused by sudden reversal of truck's direction of motion. This stops truck before direction can be reversed.

When inquiring check CP 6669 on handy form, pgs. 2-3



Model FS-25 fork truck provides standard telescoping lift of 130½ inches

Worm gearing to drive power axle is designed for use in low speed-high torque conditions common to fork truck operations. This is intended to maintain efficiency of gearing, minimize maintenance, and insure tractive power. Trailing axle in truck enables it to step over uneven flooring or obstructions, without upsetting truck's stability. Truck chassis is level even when truck's four wheels are resting on four different surface levels. Telescoping lift of truck is 130½"; overall length is 119"; width and wheelbase measure 34 and 38".

(Product of The Baker-Raulang Company, Baker Industrial Truck Div., Dept. CP, 1230 W. 80th St., Cleveland 2, Ohio . . . or for more information check CP 6671 on handy form, pages 2 and 3.)

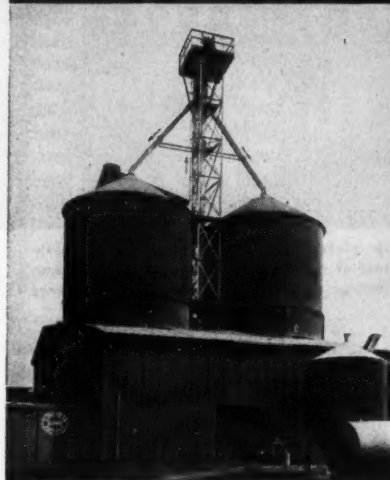
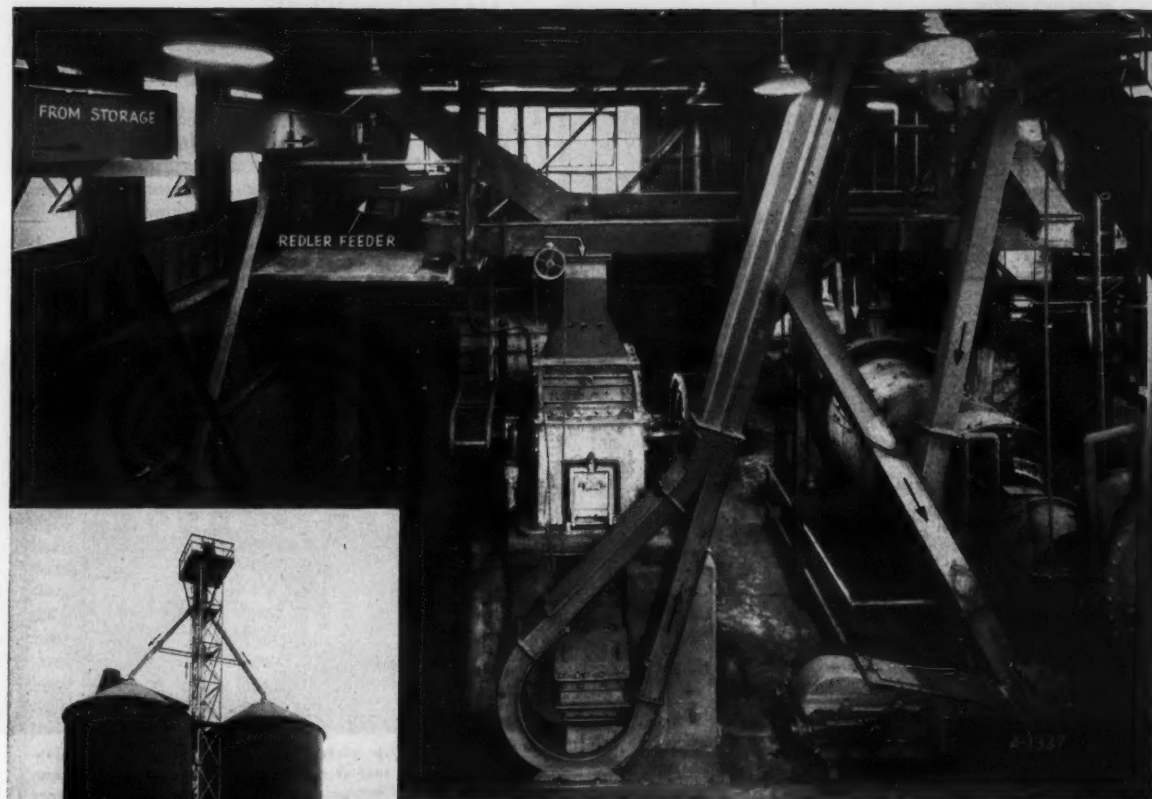
Life of rubber conveyor belts can be lengthened by proper maintenance . . .

serviceability also depends on correct selection, installation, and use

Prepared from article by Fred Matheis, Ass't Vice-Pres, Thermoid Co., Trenton, N. J.

Life of rubber conveyor belting can be greatly extended by following correct maintenance procedures. Precautions should be taken to avoid damage by first selecting correct type of belt, and then installing and using it properly. Whenever repairs are necessary, they should be made promptly according to standard procedures.

(Continued on next page)



Kaiser Aluminum and Chemical Corporation

This plant processes coke into carbon that will be used in anodes and cell linings for aluminum production. The coke is elevated, stored, removed from storage, fed to grinding mills, put in bins and then moved to mixers—all by S-A REDLER Conveyors and Elevators. Feed conveyors recirculate coke to prevent jamming when it is not immediately needed at grinding operation. Approximately 10,500 tons of coke per year are handled with no dust hazard by this S-A REDLER System.

REDLER Conveyor-Elevators
ZIPPER Conveyor-Elevators
Vibrating Conveyors
Belt Conveyors
Screw Conveyors
Bucket Elevators
Pan Conveyors and Feeders
Circular Bin Dischargers
Centrifugal Loaders and Pilers
TELLEVEL Bin Level Controls
Ship Loaders and Unloaders
Storage and Reclaiming Systems
Box Car Loaders and Unloaders
Bin Gates, All Types
SEALMASTER Ball Bearing Units
Write for Bulletins
on any of the above.



for safe,

DUSTLESS DELIVERY of bulk chemicals . . .

If you move chemicals in bulk, S-A REDLER Conveyors and Elevators can help you do it at low cost, in steady dustless flow. REDLERS can easily be arranged to meet practically any handling need—including automatic recirculating and selective distribution. They are fully enclosed to eliminate dust hazards and inconvenience. Their compact design saves space.

The S-A engineer's experience in all types of bulk materials handling is broad and deep. From a complete line of equipment he can recommend impartially the system or combination *best for you*. Write and we'll arrange a meeting.

STEPHEN S-ADAMSON
MFG. CO.

11 Ridgeway Avenue, Aurora, Illinois

Los Angeles, Calif., Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 6672 on handy form, pgs. 2-3

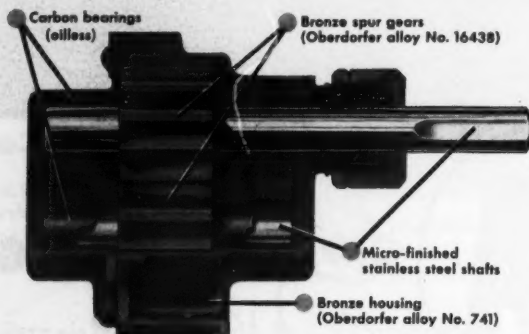
The *Low Cost* of our pumps is no indication of their *Value to You*

Do not turn down an Oberdorfer Pump because it is so inexpensive. Look at the facts.

The only way to recognize the best dollar value in pumps is to determine the cost per hour of pump operation — initial cost plus service cost divided by hours of life.

If your pumping requirements are below 150 gallons per minute and under 150 p.s.i., we believe we can beat any other installation on the market on a cost-per-hour basis.

That is why the bulk of American industry has bought Oberdorfer Pumps for so many years — because we have saved them money on pumping costs.



The only way to increase pump value is to increase the length of satisfactory service without increasing the price. Oberdorfer Pumps are now available which last five times as long as those we made two years ago, yet cost the same.

Write for a preview of our 1953 production.

See our catalog in Sweet's **PRODUCT DESIGN** File

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
6212 Thompson Rd., Syracuse, N. Y.

Please send without charge a copy of your 1953 pump catalog.

NAME _____

COMPANY _____

ADDRESS _____

When inquiring check CP 6673 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

In choosing a belt for a particular service, the size, density, and sharpness of material to be handled should be considered. Temperature and moisture content of product are also important. Belts can be provided to meet particular conditions.

Edge wear is considered to be one of the chief causes of short belt life. It pays to take considerable trouble to secure perfect alignment in installation to reduce edge wear. Worn edges can be cut off but

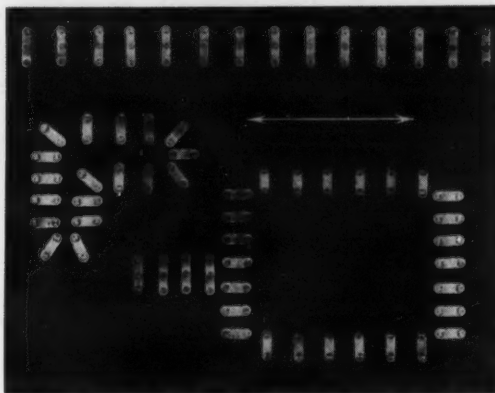


Fig 1—Rip plates have been used to repair longitudinal tear at top of photograph. All others shown are fasteners except four rip plates to lift of large square patch

they should be resealed with neoprene compounds to prevent moisture from getting into belt. Liquid neoprene can also be used to build up worn spots.

Loading conditions are a prime factor in belt deterioration. Material should fall on belt while moving in same direction and speed of belt. Loading chute can be pitched at proper angle to control velocity of material. Product should be directed to center of belt and should not strike it above a solid pulley. Construction and placement of skirt-boards should be carefully engineered.

Belt maintenance begins even before installation. Belting should never be dropped from a truck or railroad car. Precautions must be taken to avoid cutting or puncturing it. If stored, it should be protected from sunlight.

During installation, threading of belt over idlers and pulleys is critical. Sharp bends and twisting are to be avoided. Excessive tension must not be exerted on belt. Severe damage may result if some material is allowed to fall on return side of belt and be squeezed between belt and pulley. Best solution is to cover return side with a deck. Permanent installation out-of-doors should be covered with some type of structure.

Responsibility for maintenance should be delegated to one man who, with his assistants, checks all belts at frequent intervals for excessive wear or damage. Oil and grease should be removed promptly. Regular belt repair shop is justified in large plants.

All belt damage should be repaired promptly as soon as it is discovered. This not only prevents spread of damage but will keep out water, which is the natural enemy of the conveyor belt carcass.

BAKER 4-PURPOSE CARRIAGE

Makes a Fork Truck do more work



Hydraulically operated attachment for Baker Fork Trucks, providing:

- 1 STANDARD FORKS
- 2 CLAMP
- 3 FORK SPACER
- 4 SIDE SHIFTER

● With this special lift carriage assembly, in place of a regular fork lift carriage, any standard Baker 2000 to 4000-lb. Fork Truck becomes a multi-purpose handling

machine. From one adjustment it functions as a standard fork truck for pallet and ordinary fork truck handling, as a clamp truck for handling drums, cartons, skid boxes, etc., and as a fork-spacer, permitting the handling of varying widths of pallets, skids or other loads. A simple change in the adjustment converts it into a side-shifting fork truck which speeds many carloading and storing operations by making it easier to line up loads in close quarters. Lateral movement of forks in each case is operator-controlled by a lever conveniently located on the dash. Action is hydraulic, with roller conveyor chain linkage.

For complete information ask for BULLETIN 1350-1

THE BAKER-RAULANG CO.
1208 WEST 80th STREET, CLEVELAND 2, OHIO

Baker INDUSTRIAL TRUCKS

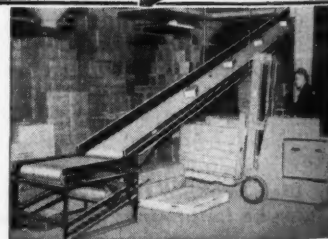
When inquiring check CP 6674 on handy form, pgs. 2-3

MODERN TIME AND COST SAVERS

BUILT BY...

Standard
GRAVITY & POWER
CONVEYORS

LIFT OR
LOWER—
FLOOR TO
FLOOR
WITH A



STANDARD INCLINEBELT

Move boxes, cases, cartons, sacks or bundles from basement to first floor, or any floor to floor — continuously with the Standard Inclinebelt. Compact — simple to install — minimum maintenance and attention. Lifts or lowers 10 to 20 lbs. of live load per ft.; floor elevations of 8 ft. to 14 ft. 6 inches inclusive; two belt widths to handle commodities 15½ inches to 25½ inches wide.

Electric motor operated. Write for INCLINEBELT Bulletin — address Dept. CP-122.



STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minn.
Sales and Service in Principal Cities

When inquiring check CP 6675 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Long and deep cuts which go through to fabric should be mended by opening cut, cleaning out all dirt, and cementing cut closed. Where bits of torn cover leave exposed spots with only slight damage, remove loose ears of cover stock by cutting curved, beveled area around spot. Edges are then sanded and patch applied flush with cover.

Where gouges have penetrated belt, or longitudinal rips have occurred, these points must be cleaned, sanded, cemented, and reinforced with rip plates at three-inch intervals. Transverse tears require similar treatment with standard belt fasteners instead of rip plates. Rip plates should be used only on longitudinal rips and standard fasteners on transverse tears only. Proper use of rip plates and fasteners is illustrated in Fig. 1.

Where holes in belting are relatively small but do not permit use of rip plates and fasteners, another procedure must be followed. Cut out hole into smallest possible rectangle with its sides parallel to and at right angles to belt edges. From belting remnants, cut an exact fit for hole, insert piece, and secure it with fasteners. Cement all edges thoroughly.

Vulcanized patches are superior to those described in preceding paragraph, especially for larger holes or worn spots. This method requires a portable or

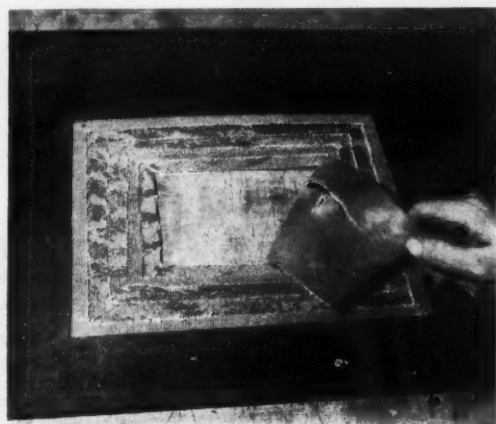


Fig 2—Illustration of procedure followed in removing fabric preparatory to applying a vulcanizing patch

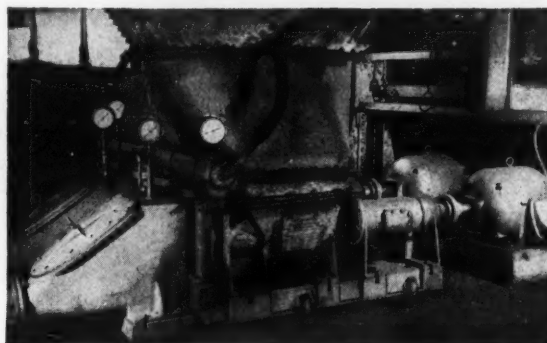
stationary vulcanizer and some other additional equipment. In preparing a vulcanized patch, section of belt to be removed is marked out on top with a square (parallel and at right angles to edge). Progressively smaller blocks of fabric are removed with each successive ply as shown in Fig. 2. Be certain section is large enough so that final square will completely encompass damaged area.

Clean, roughen, and cement cavity. Neatly fit in blocks of new fabric and finally uncured cover. Skive edges of patch flush and vulcanize. Such patches cannot be made successfully unless belt is dry, requiring use of a drying rack. Only large users of conveyor belting will find it economical to vulcanize their own patches and splices.

(Courtesy of Thermoid Co., Dept. CP, 400 Whitehead Road, Trenton, N. J. . . . or for more information check CP 6676 on handy form, pages 2 and 3.)

TYPICAL MATERIALS HANDLED BY FULLER-KINYON CONVEYING SYSTEM

Asphalt filler dust
Barytes
Bauxite
Catalysts
Cement (Portland)
Cement raw Materials
Chalk
Clays (dried)
Coal (pulverized)
Coke Dust
Dolomite (pulverized)
Feldspar
Flue Dust
Fly Ash
Fuller's Earth
Gypsum (calcined)
Gypsum (raw)
Lime
Limestone (pulverized)
Magnesite
Manganese dioxide
Ores (pulverized)
Phosphate rock (pulverized)
Rock dust
Soda ash
Starch



Quick, dust-free handling of pulverized coal, using Fuller-Kinyon System.

Check and PASS ON

Make this a memorandum — and Pass On to others — if your processes require mass handling of dry, pulverized materials.

Check the materials which you handle and Pass On this information to the Fuller Company.

With twenty-six years of experience in this specific field, the Fuller Company can help engineer your handling methods into less costly, more efficient, more dependable operation.

THE FULLER-KINYON SYSTEM FOR DRY PULVERIZED MATERIALS CONVEYING HAS SEVERAL DISTINCT BENEFITS:

1. Mechanical movement limited to few parts.
2. Little to get out of order.
3. No explosion or occupational hazards.
4. Pipelines carry material vertically, horizontally, around corners — between multiple operations.
5. Fuller-Kinyon Pumps maintain full capacity over long travel distances, at low cost.
6. Portable units perform several operations.

Pass on the word to Fuller for specialized engineering assistance on any problem involving mass handling of dry, pulverized materials. Fuller's twenty-six years of such experience is yours to command. Send along a memorandum to Fuller now.

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS •
COMPRESSORS AND VACUUM PUMPS •
FEEDERS AND ASSOCIATED EQUIPMENT

Fuller

FULLER COMPANY, Catasauqua, Pa.
120 So. LaSalle St.—Chicago 3
420 Chancery Bldg.—San Francisco 4

P-146
1631

When inquiring check CP 6677 on handy form, pgs. 2-3

Now...Industry does big-truck jobs at small-truck cost with **YALE WORKSAVERS**



High-Lift Platform Work saver

SOLVE

TIME-SPACE PROBLEMS!
Move loads into and out of any storage or production area—easily and efficiently.

SOLVE

MANPOWER PROBLEMS!
Any man in your plant can transport, lift and stack multi-ton loads, safely—and surely.

SOLVE

COST PROBLEMS!
YALE ELECTRIC WORKSAVERS are low in initial cost and economical to maintain.

YALE WORKSAVER ELECTRIC HYDRAULIC POWERED HAND TRUCKS move right in—where big trucks are too big or too heavy. Yet, they give all the big-truck advantages at far less cost: forward and reverse power travel...power hydraulic lift...everything! That's why industry prefers YALE WORKSAVERS...the right answer to countless materials handling problems in every plant or factory.

CONTACT your Yale Representative to arrange a free WORKSAVER demonstration for you...right in your own plant or warehouse! See it lift and transport—through narrow doors, into elevators and freight cars, over low-load flooring—saving you time, money and manpower every hour—every day.

YALE

Yale is a registered trade mark of The Yale & Towne Mfg. Co.

MATERIALS HANDLING EQUIPMENT

Gas and Electric Trucks
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Hand and Electric Hoists
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Pul-Lifts
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Work savers

—MAIL THIS COUPON TODAY—

The **YALE & TOWNE Mfg. Co., Dept. 1212**
Roosevelt Blvd. & Haldeman Ave., Phila. 15, Pa.

Cutting costs with YALE WORKSAVERS interests me, too.
☐ Please send me a free copy of Picture Story of Yale Materials Handling Equipment
☐ Please have your local Representative call on me.

Company _____

Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Mfg. Co., Box 337—Postal Station "A"—Toronto

There's a Yale Work saver to meet your every need!

MATERIAL HANDLING

Transporting, weighing, maintaining pre-set feed rate of fine material is uniform . . .

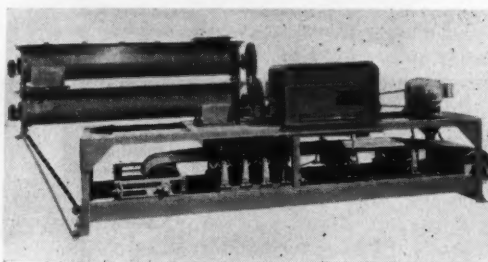
accuracy of machine reported at +99.5 per cent, regardless of belt speed or weight changes

Uses: For automatic and continuous transporting, weighing, and maintaining pre-set feed rate of any finely-divided material commonly used in chemical and food processing.

Features: Feed is regulated with an accuracy of 99.5 per cent or better, regardless of belt speed or tonnage variations. Weight integrator, having no inherent error, mounted in dust-tight cabinet is a completely mechanical, gear differential type. Pneumatic and electrical connections are necessary for its operation.

Description: Photo shows a 24" belt, feed regulating Transportoweigher designed to handle ground phosphate rock, 55 per cent — 200 mesh, and weighing approximately 75 lb/cu ft. A knurled feed-rate setting handwheel mounted inside the scale cabinet pre-sets the capacity to any rate within the 10-24 tons/hr range. The integrator records on a direct reading tonnage totalizer the tonnage passing over the belt. The tonnage indicator, which can be calibrated in tons/hr, lb/min, or any special scale reading as desired, from 0-100 per cent capacity, instantly indicates weighing rate.

The scale suspension is free-floating type, restrained from response to longitudinal and lateral type movement by simple check links attached to the frame. To assure even feeding of the belt, and to eliminate



Transports, weighs, governs feed rate to 99.5 per cent

the effect of "skirt board drag" against the suspended weighing idler, the material is fed on the belt through two totally-enclosed helix screw conveyors mounted one above the other on the frame over the belt.

The ground phosphate is loaded by means of an appropriate chute or hopper into the top conveyor operating at 12-36 rpm, depending on the pre-set feed rate. The material then passes into the bottom conveyor, operating at three times the speed of the top conveyor, assuring steady, even feed to the weighing conveyor belt.

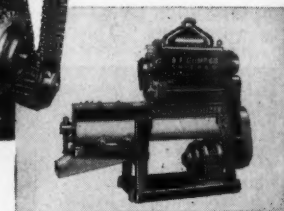
The two conveyors are driven by a variable speed drive with integrally mounted pilot motor which has an adjustable speed ratio of 3:1. The 24" rubber-covered belt is roller chain driven at 120-360 rpm by a 3/4 hp totally enclosed motor.

(Development of Transportometer Div., Sintering Machinery Corp., Dept. CP, 301 Sinter Ave., Netcong, N. J. . . . or for more information check CP 6679 on handy form, pages 2 and 3.)

FOR POSITIVE PRODUCT CONTROL



B. F. Gump Co. Coffee Granulizer showing the non-slipping, long life Diamond Roller Chain Drives used for positive operation of the Cutting Rolls.



DIAMOND ROLLER CHAINS

Diamond Roller Chains provide "quiet-running positive drives that revolve the Cutting Rolls toward each other at the proper differential speeds. These modern drives result in worthwhile savings in maintenance and operation".

Diamond Chains eliminate troublesome, heavy gear trains. They provide positive, non-slip operation of a number of shafts rotating in the same or opposite directions and at the same or different speeds. Shaft center distances and speed ratios make no difference. The drive is as positive as gears—without the weight, the number of bearings needed, the lubrication problems, or the separating forces.

Diamond Roller Chains can help you solve your toughest drive problems. Investigate now. There is no obligation.

DIAMOND CHAIN COMPANY, Inc.

Dept. 411, 402 Kentucky Avenue,
Indianapolis 7, Indiana

Offices and Distributors in
All Principal Cities

Refer to the classified section of your
local telephone directory under the
heading CHAINS or CHAINS-ROLLER

DIAMOND ROLLER CHAINS

When inquiring check CP 6678 on handy form, pgs. 2-3

When inquiring check CP 6680 on handy form, pgs. 2-3

MATERIAL HANDLING

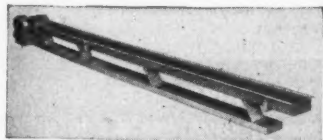
Oscillating conveyor moves material steadily . . .

handles large volumes in screening, conditioning, etc

Uses: For light duty applications. Installations have been made for handling various types of free flowing, granular materials. Conveyor is being used for hot sintered products, abrasive materials, metal chips and turnings, and other materials considered difficult to move.

Features: Large volumes of material move forward in uniform, continuous flow with oscillating motion of conveyor. Screening, sorting, cooling, or conditioning can also be accomplished with unit. Screen sections can be put in trough for scalping or sizing.

Description: Flexmount conveyor has continuous metal trough, mounted on resilient supports. Mechanical constant stroke eccentric drive gives trough upward and forward oscillating motion to move material. Units can handle materials up to 500°F without use of special trough metals. Dividers can be added



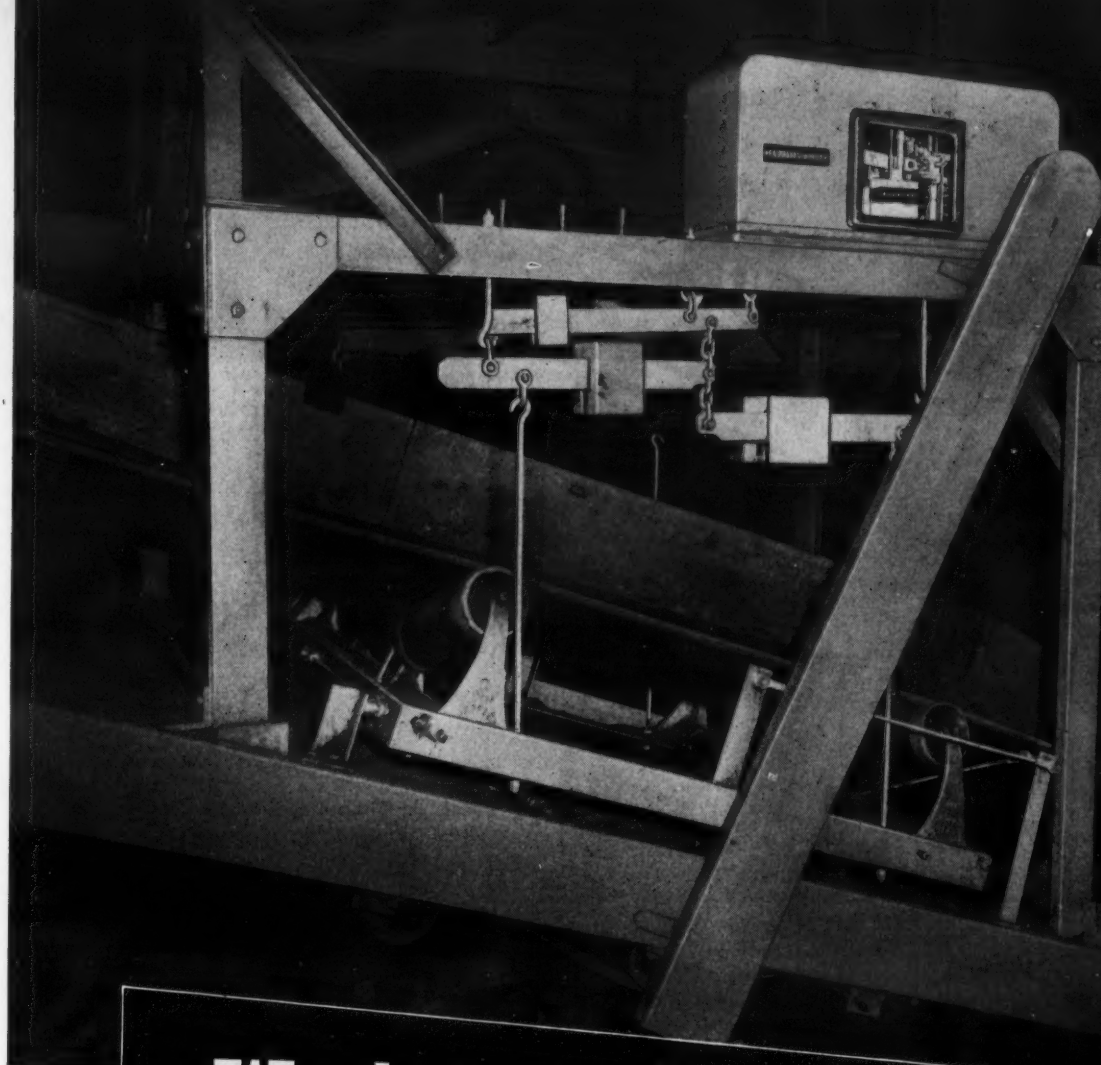
Oscillating conveyor

so that two or three products can be carried at one time without mixing. Conveyor can be water-jacketed or fitted with an air-cooling hood. It is easily made dust-tight.

Oscillating conveyors in any desired length can be ordered and built by purchaser from factory sub-assemblies available from stock. Sub-assemblies can be obtained in 8, 12, and 18" trough widths.

(Product of Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. . . . or for more information check CP 6681 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 6682 . . . see information request blank between pages 2-3.



Weigh it on the way.....

Cut costs and streamline your weighing of bulk materials with this Fairbanks-Morse Belt Conveyor Scale . . . it cuts out extra handling and weighing at a remote point. For example, here it weighs coal *automatically* as it moves from scalping screens to the wash box. This Fairbanks-Morse Scale has a capacity of 700 tons an hour at 400 belt feet a minute, and you can get accu-

culated totals with the remote tonnage register from a central control room *and* with the mechanically operated register at the scale itself. If you are handling bulk materials on belt conveyors, you'll find it pays to talk to your Fairbanks-Morse Weighing Expert. Or if you prefer, write for complete details to Fairbanks, Morse & Co., Chicago 5, Ill.



FAIRBANKS-MORSE

a name worth remembering when you want the best

SCALES • DIESEL LOCOMOTIVES • ELECTRICAL MACHINERY • PUMPS • HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS

**PAINTS
INKS
VARNISHES
THINNERS
SOLVENTS**

Move

**QUICKLY
SAFELY
EASILY**

● A well-known varnish plant depends on this bank of Roper 3600 Series pumps to keep production humming. It is a typical example of Ropers on the job, for there are many similar installations. Some pump liquids even thicker than varnish; others pump liquids as thin as gasoline. The Roper 3600 Series is available in various combinations of pump sizes, gear reduction ratios, and motor sizes to provide unusual adaptability to innumerable pumping needs in petroleum, processing, and general industries. Capacities of 40, 50, 70, 90, and 100 g.p.m. at 60 lbs. p.s.i. are available.

FEATURES THAT ASSURE DEPENDABILITY

Long service life is provided by hardened steel reduction gears running in oil on anti-friction bearings... a flexible coupling connects gear reduction and motor to eliminate thrust or radial loads... pumping gears operate in axial hydraulic balance... steel shafts run in high-lead bronze bearings... split packing gland in an extra-deep packing box facilitates servicing. You'll want *all* the facts on compact, quiet-running Ropers so send the coupon today!

ROPER
Rotary Pumps



GEO. D. ROPER CORPORATION
752 Blackhawk Park Avenue, Rockford, Illinois

- ☐ Please Send Catalog.
☐ Have a Roper Representative Call

NAME _____
ADDRESS _____
CITY _____
COMPANY _____

When inquiring check CP 6683 on handy form, pgs. 2-3

MATERIAL HANDLING

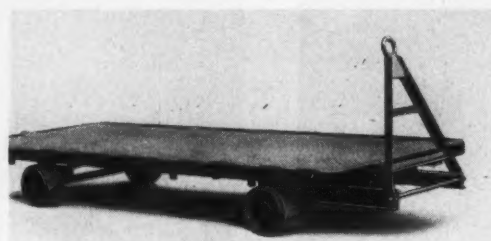
When loaded to capacity, trailer takes ten-ton bite out of materials handling...

rubber-tired, ball bearing wheels move cargo on 3/16" steel deck 22 1/2" above floor

Uses: For handling materials trailer-fashion, particularly for dock and yard service.

Features: Flush-type steel deck 3/16" thick rides on rubber-tired, ball bearing wheels and is 22 1/2" high. Capacity of trailer is rated at 20,000 pounds.

Description: Designated as Model A-614-10B, trailer shown here has deck measuring 7' x 14'



Carries 10 tons at a time

and is of the non-skid type. (Smooth steel or flush hardwood decks are optional.) Heavy cast steel wheels are Timken bearing mounted on 2 3/4" diam axles, fitted with 15 x 8" pressed-on solid rubber tires.

Attached to fifth wheel turntable assembly is a long loop handle drawbar for easier steering and maximum maneuverability. Rear of trailer is fitted with a safety "C" type coupler. Stake pockets are located four on each side, two on each end. User's requirements for number of pockets and position, as well as deck measurements can be varied.

(Development of Mercury Manufacturing Co., Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. ... or for more information check CP 6684 on handy form, pages 2 and 3.)

Accuracy in weighing of material in trucks and trailers assured with axle load scales...

ball-bearing principle of construction saves wear and insures dependability

Uses: For continuous weighing of truck and trailer axle loads at trucking terminals, warehouses, and industrial plants.

Features: Accuracy in weighing is insured by design of unit. Ball-bearing principle of construction saves wear on knife edges and bearings and prolongs scale accuracy.

Description: Line of Axle Load Scales includes nine standard models with capacity range of 15, 20, and 30 tons. Platform sizes are 4, 6, or 8' long by 10' wide.

Unit has three-lever Pipe Lever System, which minimizes number of parts, levers, knife edges,



**Wise buyers are buying
HARRISBURG SEAMLESS
STEEL CYLINDERS FOR
HIGH-PRESSURE GASES**

Right Now!

**for LIQUID
GASES**

carbon dioxide, chlorine

**for
FIXED
GASES**

helium, hydro-
gen, nitrogen,
oxygen

for MEDICAL GASES

carbon dioxide, cyclopropane,
ethylene, helium, nitrous oxide,
oxygen.

HARRISBURG STEEL...
pioneer and world's largest
producer of seamless
steel high-pressure gas cyl-
inders made to I.C.C. Spec-
ifications... offers you a
complete range of sizes,
capacities, and types...
for domestic and export
use.

We shall be glad to
mail you this Cata-
log of Harrisburg
Cylinders... and
quote prices
upon request.



HCC52-4

Harrisburg Steel
CORPORATION
HARRISBURG 20,
PENNSYLVANIA

When inquiring check CP 6685
on handy form, pgs. 2-3

CHEMICAL PROCESSING

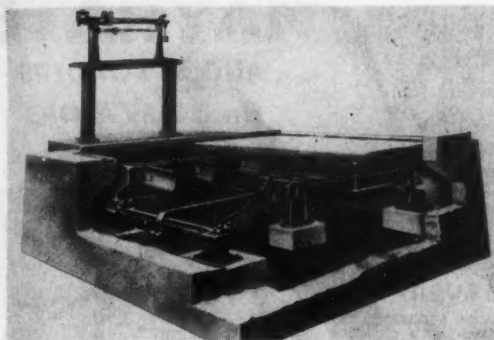


Illustration shows construction of axle load scales

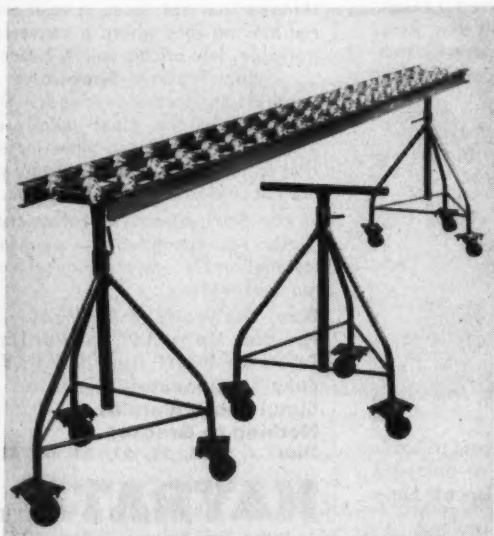
connections, and friction points in construction. The scale is rugged, compact, and it requires little maintenance.

(Announced by The Howe Scale Company, Dept. CP, Rutland, Vt. . . or for more information check CP 6686 on handy form, pages 2 and 3.)

Moving conveyor sections is quick, simple through use of portable tripod . . .

requires no bolting for firm support, three size models move on rubber casters

Quick and easy movement of conveyor sections is reported by manufacturer of portable tripod conveyor supports that require no bolting to gravity



Tripods on wheels ease moving conveyor sections

conveyor sections. Design permits use with nearly all makes of conveyors. They are available in three models: small, medium, and large. Special stands available for special height requirements.

(Development of Speedways Conveyors, Inc., Dept. CP, 1221 Niagara St., Buffalo 13, N. Y. . . or for more information check CP 6687 on handy form, pages 2 and 3.)



Truck synchronizes flow of materials to match production. Here tire treads are carried from treading machine as soon as finished. No delay—no clutter.



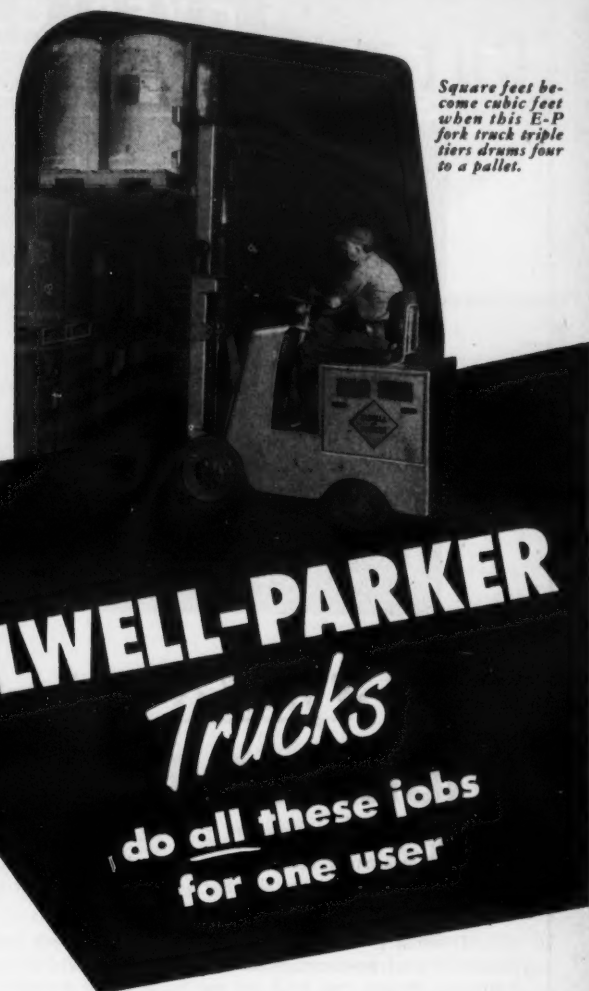
"King size" load of tires transported by E-P low lift truck on special skid.



Goodyear finds Elwell-Parkers valuable in their maintenance dept., too. Here a heavy truck tire mold is moved in the machine shop.



High stacking huge tires—Elwell-Parker ease of control pays off on a job like this.



Square feet become cubic feet when this E-P fork truck triple tiers drums four to a pallet.

ELWELL-PARKER Trucks

do all these jobs for one user

The versatility of Elwell-Parkers is well illustrated by these typical applications at the Akron plant of Goodyear Tire & Rubber Co. All over this huge factory Elwell-Parkers are constantly on the go in production, storage, distribution and maintenance . . . Without obligation an experienced man will gladly survey your plant—to uncover new cost-cutting applications for industrial trucks. The Elwell-Parker Electric Co., 4019 St. Clair Avenue, Cleveland 3, Ohio.

NEW General Catalog describes all E-P trucks in detail. Write for your copy NOW.



ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893

When inquiring check CP 6688 on handy form, pgs. 2-3

Cut out OVERLOADING UNDERLOADING



with **SYNTRON** "vibra-flow" VIBRATORY FEEDERS

Syntron Vibratory Feeders provide an efficient, economical method of conveying bulk chemicals and the simplest and easiest means of controlling the rate of flow.

All along your chemical production line materials can be made to flow as desired — your processing plant need never be starved or overfed — with Syntron Vibratory Feeders your feed rate can be varied to provide a flow of materials to suit your needs.

Overloading or underfeeding is thus avoided without constant supervision — no more overflows that waste costly chemicals — no more tie-ups or material shortages that slow production — your processing can be continuous with maximum output and efficiency, plus — minimum maintenance costs. Due to the absence of mechanical wearing parts, Syntron Feeders operate with an exceptionally low maintenance cost.

MATERIALS HANDLED INCLUDE

Sal Ammoniac
Tartaric Acid
Insecticides
Photographic Chemicals
Dental Powder
Phosphates
Face Powder
Fertilizers
Nitrates
Resins
Arsenic, etc.

They are available in a number of models and trough styles, with capacities up to 500 tons per hour, that are readily adaptable to many processing systems.

Our Engineering Dept. will gladly recommend the correct model Syntron Feeder for the solution of your feeding problems. Please include all pertinent data, such as material to be fed, percentage of moisture, approximate tonnage requirements per hour, etc.

Cut out overloading, underfeeding — write today for the full facts on Syntron Vibratory Feeders and see how they can help you.

Write For Your FREE Copy Of Our 25 Page Booklet

SYNTRON COMPANY

110 Lexington Avenue

Homer City,

Penna.

When inquiring check CP 6689 on handy form, pgs. 2-3

MATERIAL HANDLING

**Low lift type truck handles
up to 4000 pound loads
in small spaces . . .**

weight is distributed over five points on frame to minimize floor damage

Riding type electric truck raises 4000 pound load off the floor and carries rider at suitable speed. Spacemaster model M low lift truck is available in either platform or pallet construction. Former type operates in 6' aisle with 48" load; latter operates in 7' aisle with similar load length.

Articulated linkage contributes notable advantages. For example, the load is carried entirely by separate frame and has two stabilizing casters. With drive



Weight of load on low lift truck is equally distributed

unit hinged to load carrying portion of truck, weight on drive wheel is constant and results in easy steering. With weight equally distributed over frame, damage to floors is negligible and the gear drive is protected against overloading.

(Product of Lewis-Shepard Products, Inc., Dept. CP, Watertown, Mass. . . or for more information check CP 6690 on handy form, pages 2 and 3.)

**No need to wait for dock space
before transferring material
on or off freight cars . . .**

loading or unloading from ground level is simplified with lightweight ramps

Uses: For loading and unloading materials from railroad freight cars.

Features: Eliminates waiting for access to loading docks. Freight cars can be loaded or unloaded from ground level. Lightweight and balanced, ramp can be positioned by one man.

Description: Portable magnesium Yard Ramp is made in five standard sizes, all measuring 30', but with varying widths of 60-70". Weight in standard models ranges from 1150 to 1950 lb; capacities (including load and materials handling equipment combined) range from 6000 to 16,000 lb. Quarter-round safety curbs along top sides of ramp protect equipment. Ends of curbs are capped with an end casting which tapers to each corner of the ramp.

Bridge-type underbracing gives maximum strength,

Now Available... **MAYRATH**

**AUGER LOADERS
and ELEVATORS
for Industry!**



**For ALL TYPES of
GRANULAR MATERIALS
PORTABLE! FAST! SIMPLE!**

Dealer Prices to Industrial Users

AS LOW AS \$63.60!

**World's largest selling!
Satisfaction Guaranteed
or Your Money Back!**

Used for many years by farmers to move wheat, oats, barley, corn, and other small grain.

For Standby Use

Now . . . available to industry as a standby unit for those special material moving jobs where a convenient, portable, low-priced unit is needed.

For Trouble-Shooting

Meets temporary overloads. Goes anywhere in the plant quickly and easily. Permits you to move material that is not in the area served by your normal material handling system.

For Permanent Installations

Also recommended as a permanent installation for fast, economical movement of material.

**Does the Work of 15 Men!
Handles Up to 45 Tons Per Hour!
PAYS for ITSELF the FIRST DAY!**

**Easy to Operate!
Simple to Maintain!
Nothing to Grease!**

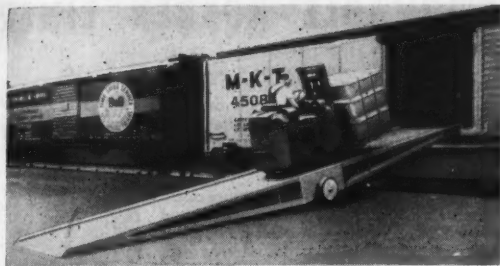
Sizes . . . 16, 21, 27, 34 and 41 Ft.

MAYRATH INC.

Dodge City, Kansas Dept. "CP"
☐ Please send me more detailed information on the Mayrath Auger Loader.
☐ Please have your sales engineering representative call and investigate the adaptability of the Mayrath Auger Loader to our material handling problem.
We want to move . . . (material)
Name
Company
Address
City State

When inquiring check CP 6691 on handy form, pgs. 2-3

CHEMICAL PROCESSING



No docks required for loading

with minimum weight. A large wheel on each side of the ramp balances the weight evenly, permitting one man to maneuver ramp into position. Lower end of ramp on the ground prevents its being forced out of car during operations.

(Magcoa Yard Ramp is a product of the Magnesium Company of America, Dept. CP, 1515 N. Kilpatrick Ave., Chicago 51, Ill. . . . or for more information check CP 6692 on handy form, pages 2 and 3.)

Lift truck has disc-type brake to minimize maintenance . . .

clutch can be completely removed or installed in less than an hour

Two fork lift truck models, which have been field tested in industry for two years, are intended to minimize daily servicing and facilitate efficient materials handling. Mechanical features of trucks include a heavy-duty, disc-type brake to simplify



Model XA-60 has load capacity of 6000 lb

maintenance and a clutch that can be completely removed or installed in less than an hour.

Model ZA-80 has 8000 lb load capacity; and model XA-60 is 6000 lb version of larger truck, but with shorter wheelbase, width, and overall length. Heavier model is reported to have shorter overall length, longer wheelbase, and better weight distribution than comparable industrial trucks. Lighter model is said to be smallest and heaviest 6000 lb truck ever designed.

(Product of Hyster Company, Dept. CP, 2902 N.E. Clackamas St., Portland 8, Ore. . . . or for more information check CP 6693 on handy form, pages 2 and 3.)

HANDLING "TOUGH" MATERIALS?—



A 60' Carrier Natural-Frequency screening conveyor for clay products, with 24" pan made of 1/4" steel plate.
Capacity: 100 tons of 100-pound material per hour. 5 H.P. drive. Middle section of screen removed to show supporting bridge.

Close-up of drive — note patented drive linkage which always places weight of vibrating pan and conveyed materials on the spring supports, and never allows these loads to be imposed on the eccentric shaft and bearings.

anything that's hot, sharp, powdered, oily, abrasive, sticky, granulated or stringy?

Check These Advantages!

- **LESS POWER REQUIRED**
(1000 foot-tons per hour per H.P.)
- **LESS MAINTENANCE & DOWN-TIME**
(Less power + good design = good service)
- **GREATER CAPACITY**
(From a dribble up to 200 tons per hour)
- **HIGH CONVEYING SPEED**
(Up to 100 feet per minute, on flat hauls)
- **NO DAMPENING UNDER LOAD**
(Designed with extra power for specified load, with positive stroke)
- **SELF CLEANING**
(Continuous smooth trough—no pockets)
- **SCREENS, DEWATERS, SEPARATES, BLENDS, DRIES, COOLS**
(Combines processing with conveying)
- **WIDTHS FROM 6" TO 48"; LENGTHS FROM 5' ON UP**
(With pans 16 gauge to 1/2" plate or heavier, open or enclosed)
- **BALANCED, VIBRATION-FREE UNITS AVAILABLE**
(For use on ceilings or light floor construction)

Carrier Natural-Frequency Conveyors work on a unique, patented vibrating principle which permits them to handle many materials that are too "tough" for most screw, belt, apron, vibrating and other conventional types of conveyors. These spectacular new conveyors also substitute the natural resonance action of coil springs for brute force. Result—a tremendous reduction in power . . . far less wear-and-tear . . . and an absolute minimum of maintenance and down-time!

Carrier Natural-Frequency Conveyors—including vertical vibrating spiral types—are now racking up amazing conveying records for scores of America's biggest, most successful industrials. Let us prove to you that they will move *your* product more quickly, efficiently and economically. Mail the coupon—no obligation of course!

CARRIER NATURAL-FREQUENCY CONVEYORS

Carrier Conveyor Corporation (formerly Whitley-Carrier Co.)
Frankfort Avenue at Clifton, Louisville 6, Kentucky
Gentlemen:
Without obligation, please send me Carrier Natural-Frequency Conveyor Bulletin No. 116.

Firm _____
Street _____
City _____ State _____
Att. Mr. _____ Dept. _____

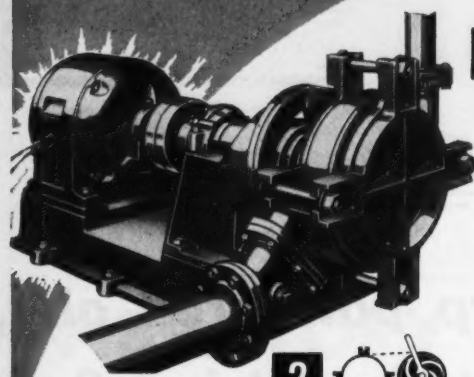
When inquiring check CP 6694 on handy form, pgs. 2-3

MORRIS

Type R Slurry Pump

Gives Longer Service, Less Trouble

because



No internal studs or bolts — no troublesome internal joints and fits. Suction Disc Liner is merely clamped into position between disc and shell. Fewer wearing parts mean less maintenance and longer uninterrupted service.



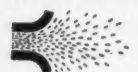
Impeller and shaft sleeve of the Morris Type-R Slurry Pump can be renewed without disturbing the suction and discharge piping or the bearings. This means considerably less lay-up time.

3



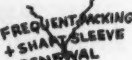
Due to the clamping effect of the bolts on the discs, the shell is not subject to high stress. Consequently, the shell can be made of a wide variety of materials, including those of high abrasive resistance. Yet these materials need not necessarily be of high tensile strength.

4



Hydraulic passages of the suction discs are extremely large and velocities are low. As a result, wear is minimized and renewal infrequent.

5



Stuffing box troubles are practically eliminated because the suction gland is under low suction pressure only.

Write today for free bulletin

Practical information in Bulletin No. 181 shows by performance curves just how the Morris Type-R Slurry Pump fits specific operations . . . describes exclusive construction features that cut operating costs.

FOR CHEMICAL OPERATIONS

Morris Type-R Slurry Pump handles mixtures containing ore concentrates . . . tailings, silt and residue from filters and classifiers . . . all types of caustic or acid mixtures containing abrasives or solids.

MORRIS MACHINE WORKS

Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS

Centrifugal Pumps

When inquiring check CP 6695 on handy form, pgs. 2-3

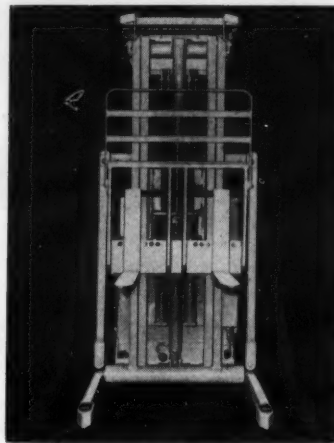
MATERIAL HANDLING

Adjustable base fork for pallets of various widths . . .

will fit straddle-type trucks of 2000-3000 lb capacity

Pallets varying in width from 32 to 48" may be handled by adjustable base forks, which are optional equipment for the manufacturer's straddle-type electric tiering trucks.

Made of welded steel sections, forks are hinged to main frame and adjusted manually by screw



Adjustable base forks are shown installed on truck

arrangement. They are intended for this style truck, which has capacities of 2000 or 3000 lb and standard load wheels.

(Product of The Raymond Corporation, Dept. CP, 5790 Madison St., Greene, N. Y. . . . or for more information check CP 6696 on handy form, pages 2 and 3.)

Ripping of conveyor belts prevented in heavy duty applications . . .

special carcass resists tearing action of sharp objects

Virtually rip-proof conveyor belt is designed particularly for uses where belt may be subject to severe ripping or tearing action by foreign objects. Typical examples are applications in coal mining and handling, quarry work, and mining of metallic ores.

Special carcass of belt has multiple strands of high tensile steel wires imbedded at three-foot intervals. Even in rare instance when a foreign object does penetrate belt, tearing is limited by construction

Goodall "Snap-In" REMOVABLE RUBBER LINERS

Pliable rubber or synthetic pouches easily fitted into metal or wooden barrels, drums, vats and other containers to afford complete protection from the deteriorating action of acids, alkalis, salt solutions and other corrosive liquids. In wooden receptacles, they prevent absorption.

Carefully made to exacting specifications, these liners are smooth, strong, tough and durable. Their wide use among chemical plants, fertilizer plants, laundries, etc., is evidence of their consistent quality and the very practical savings they assure.



As illustrated, the liner is dropped into the container and held in place by snapping the liner's rubber lip over the container's rim. A rubber-covered lid tightened down on the lip assures a perfectly leakproof receptacle. When repairs to the metal drum or barrel are necessary, the liner can quickly be removed and replaced.

From one container, shipped to our factory, Trenton, N. J., we can supply "Snap-in" Liners for any number of containers of identical size and shape. This service is prompt and efficient.



Contact Our Nearest Branch for Quotation



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS AND EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles • San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • San Antonio • Other Principal Cities

When inquiring check CP 6697 on handy form, pgs. 2-3

Keep materials moving



...WITH SPO

AIR VIBRATORS

BULK POWDERED AND GRANULAR MATERIALS FLOW STEADILY FROM BINS, HOPPERS AND CHUTES equipped with low-cost SPO air vibrators. Powerful high-speed blows delivered by these sturdy units put an end to clogging and packing. Full-power starting, high-speed operation, low air consumption and maximum service life are assured by a special corrosion-proof bronze alloy cylinder liner.

Whatever your vibration requirements, SPO has a model that will do the job. Write today for Bulletin No. 50.



INCORPORATED

4831 Grand Division Ave., Cleveland 25, Ohio

When inquiring check CP 6698 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Save time! Prevent accidents!

LIFT AND DUMP MECHANICALLY

BAGS
BARRELS
DRUMS
BOXES

REDUCE HANDLING COSTS with a Cesco Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

ESSEX CONVEYOR, INC.
101 Colden Street • Newark, New Jersey
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



When inquiring check CP 6699 on handy form, pgs. 2-3

FASTER-SMOOTHER BULK MATERIAL Handling -

Via:
HAMMOND Screw-Lift

Imagine handling your bulk materials by Conveyor Screw . . . and enclosed within a tube — noiseless — dustless — clean! That's the Screw-Lift way!

Screw-Lift takes any powdered, granulated, flaky or pelleted material from receiving hopper to processing departments or to storage. It will also take material from processing machines to storage and/or deliver to packers. The system can be arranged to synchronize with your production procedure. It saves many man hours and works in places where space is at a premium. Capacities from 75 to 3000 cu. ft. per hour. No clogging or degradation of material. Built of black iron, hot dip galvanized, stainless steel or other non-ferrous alloys for sanitation. Fool-proof and efficient.

Let us submit recommendations. Write for Forms M-500-2 and M-600-2 on which you can outline your system.

Screw Conveyor Corporation
539 HOFFMAN ST. HAMMOND, IND.
SPECIALTY MARKING CO. PRODUCTS

When inquiring check CP 6700 on handy form, pgs. 2-3

MATERIAL HANDLING

to three feet lengthwise. Successful application is made in foundries where "shake-out" belts are subject to damage from hot, sharp pieces of metal.

(Product of New York Belting & Packing Co., Dept. CP, 1 Market St., Passaic, N. J. . . . or for more information check CP 6701 on handy form, pages 2 and 3.)

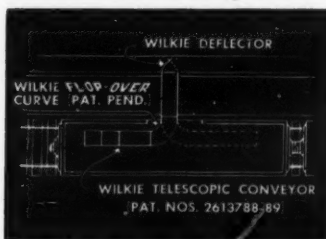
Filling or emptying of freight cars is simplified . . .

no adjustment to change direction of conveyor curve

Uses: Designed expressly for filling or emptying freight cars: when used with manufacturer's Telescopic Conveyor, curve can be incorporated into any conveyor system.

Features: All set-up time is eliminated with this 90° conveyor curve; no adjustments are required when direction is changed. Manufacturer reports saving of 1/2 to 1 hr time normally required to reverse and position other conveyors for box car loading.

Description: Wilkie Flop-Over Curve consists of a half section pivoting on the center 45° axis. Wheels or rollers on the half section extend above the channel on both sides, enabling the half



Eliminates set-up time

section to function when flipped in either direction. This feature permits the direction of flow of articles to be changed 180° simply by changing position of the conveyor from left to right as needed. Conveyor curve is available in either wheel or roller models and is rolled into position by casters.

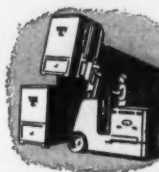
(Development of The Wilkie Company, Dept. CP, 5520 Arch St., Philadelphia 39, Pa. . . . or for more information check CP 6702 on handy form, pages 2 and 3.)

TOTE

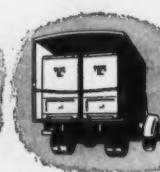
... a **COMPLETE SYSTEM** for
handling bulk materials



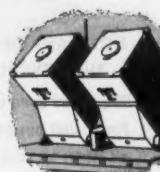
FILL
Automatically



STORE
Economically



TRANSPORT
Easily



DISCHARGE
Automatically
BATCH-WEIGH or BLEND
Accurately



- Save time and labor costs
- Save container costs
- Save storage costs
- Save losses due to weather and deterioration
- Save losses due to spillage, sifting and dusting
- Save losses due to rodent and insect infestation
- Save original product quality

EQUALLY EFFECTIVE FOR INTER-PLANT OR IN-PLANT OPERATION

Tote System—built around aluminum bins plus automatic filling and discharging equipment—is now in use in many industries handling a variety of products, both liquid and dry. They include flour, sugar, cocoa, soaps, detergents, polystyrenes, ethocel, phthalic anhydride, whiting, cement and phosphor powders.

In many instances, the savings effected in **JUST ONE YEAR** through Tote System have more than paid for the cost of the installation.

Tote engineers will survey **YOUR** plant to determine the savings **YOU** can effect, at no cost or obligation.

Write for detailed information.

*Tote and
Tote System
Reg.
U. S. Pat.
Off.

TOTE SYSTEM, INC.

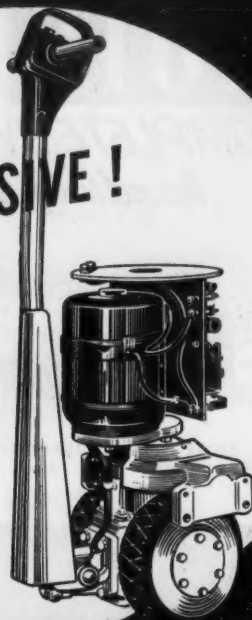
680 So. 7
BEATRICE, NEBRASKA

When inquiring check CP 6703 on handy form, pgs. 2-3

EXCLUSIVE!

**THE HEART OF
THE HYDROELECTRIC**

This sturdy Dyna-Dual Power Unit out performs all others for ease of operation—dependability—lowest maintenance cost and economy of power.



outlasts all others **4 to 1**

HYDROELECTRIC with exclusive Dyna-Dual Power Unit gives 4 times longer operating life—plus 75% lower maintenance expense—making it your best investment for material moving.

HYDROELECTRIC also brings you all these SUPERIOR functional features: Twin driving wheels • Braking at any handle position • Heavy Duty Motor, vertically mounted • 50% Easier steering • Shorter overall length • Unmatched stability • Frictionless bearings • Larger drive and trail wheels • Completely sealed differential transmission • Outstanding accessibility and ease of operation. HYDROELECTRICS will keep rolling and moving your materials at lower costs than any truck in its class.

Want proof? Complete facts and data on request.

Over 1071 different types, sizes and models—there is one for every need.



LIFT TRUCKS
INCORPORATED

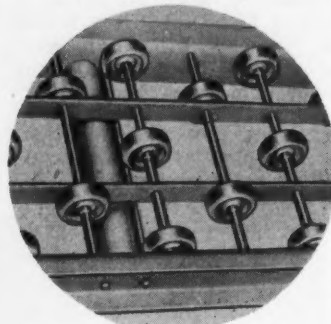
2423-31 SPRING GROVE AVE.
CINCINNATI 14, OHIO

When inquiring check CP 6704 on handy form, pgs. 2-3

MATERIAL HANDLING

**Lightweight, strength are
combined in aluminum
frame conveyor . . .**

5' section weighing 23 lb supports half-ton distributed load



Five-foot section is able to support a half-ton

Uses: As a portable, gravity conveyor.

Features: Strength and lightweight are combined to enable conveyor sections to stand up under heavy loads. A half-ton load evenly distributed can be supported by a 5' section 12" wide, with eight wheels to the foot, and weighing 23 pounds.

Description: Steel wheel-aluminum frame portable conveyor is manufactured in 45 and 90° curves, in 5, 8, and 10' lengths, and 12 and 18" widths. It is available in a choice of wheel spacings ranging from 6 to 18 wheels to the foot.

(Development of The Rapids-Standard Co., Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. . . . or for more information check CP 6705 on handy form, pages 2 and 3.)

**Illustrates features
of loading ramps**

Two-page bulletin illustrates features and specifications of magnesium car and truck loading ramps. Photos and drawings show construction of units and several applications. Handy table gives specifications of units, and text tells how to measure for ramps.

Bulletin is issued by Penco Engineering Company, Department CP, 25 California Street, San Francisco 11, California. When inquiring specify CP 6706 on handy form, pages 2 and 3.

**Filpaco STAINLESS STEEL
TANKS**

SPECIAL • SINGLE SHELL • STANDARD

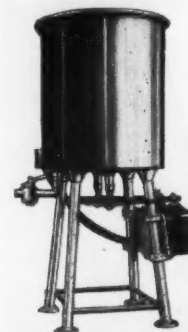
Designed and fabricated to your specifications . . . all shapes and sizes up to 2000 gal. capacity.

Accessories: Agitators, gauges, special covers, special fittings, cooling and heating coils.

Over 15 years' experience and latest fabricating equipment assures you of the right tank for the job.



Write us today concerning your problem. Your inquiries will receive immediate and personal attention by our engineers.



We also manufacture equipment for filtering, filling, mixing, conveying; as well as Filter Paper, Filter cloths and bags.



FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 6707 on handy form, pgs. 2-3

the
last
word
in
feeders



for dry materials . . . sea coal, trap rock, Vinylite, hydrated lime, zinc hydrosulphite, activated carbon—and liquids . . . acids, chemical solutions, and suspensions. For Bulletins and complete information, address Omega Machine Company (Division of Builders Iron Foundry), Providence 1, R. I.

OMEGA

When inquiring check CP 6708 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Pallets are easily maneuvered during loading or unloading of lift trucks . . .

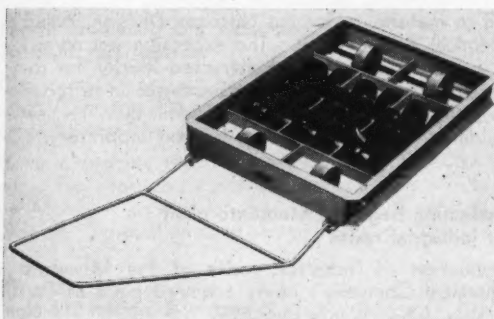
wheels of dolly are set so load will tilt, thus it's easily moved and guided

Uses: To facilitate pallet loading.

Features: Loaded dolly is easily maneuvered.

Description: In loading a car or truck, the dolly is placed near the opening and fork truck places load on it. Dolly with load is then rolled to position for unloading. Reverse procedure is followed for unloading.

Twenty-four load wheels are interlaced and tandem mounted in center portion of welded steel frame. They are placed lower than four steering wheels, two of which are mounted at each end of frame. These steering wheels are held in position



Center wheels are mounted slightly lower than four end wheels to provide tilting effect in maneuvering loaded dolly

by springs, which allow them to move on their axles. Difference in height of center and end wheels provides rocking motion or tilting effect to facilitate turns. Center wheels (on off-set axles) prevent wheels from lodging in slatted floors.

Length and width of unit are 40 x 30" and it will carry loads up to 2000 lb (special sizes up to 4000 lb). Center wheels contained in 4-1/2" high frame are 6 x 2" high, rubber tires with ball bearings. The end wheels have same dimensions.

(Product of Roll-Rite Corporation, Dept. CP, 801 Jefferson St., Oakland 7, Calif. . . . or for more information check CP 6709 on handy form, pages 2 and 3.)

Recommends methods for unloading acids

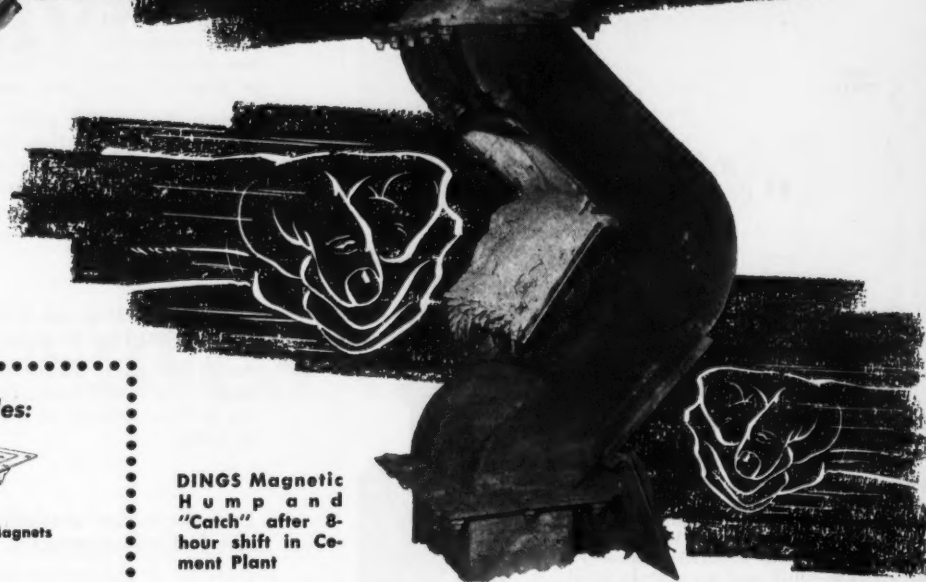
Twelve-page manual contains latest recommended practice for unloading sulfuric acid or mixed nitric and sulfuric acids from tank cars. Various sections cover safety equipment, unloading equipment, sampling procedure, use of compressed air, unloading technique, and proper handling and care of tank car.

To obtain Bul TC-1, remit 20 cents direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., 15th and H Sts., N.W., Washington 5, D.C.



Note clean magnet face before 8-hour shift in Cement Plant

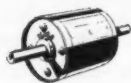
TRAMP IRON FIGHTER with a 1-2 PUNCH!



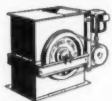
DINGS line includes:



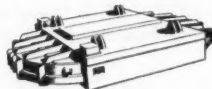
DINGS Perma-Plate Magnets



DINGS Magnetic Pulleys—Electric, Non-Electric Permanent



DINGS PERMA-DRUMS—Drum type Separators



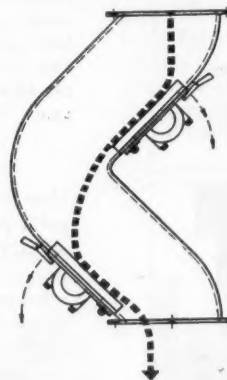
DINGS NEW RM Suspended Magnet. Most Powerful tramp iron magnet yet!



DINGS Magnetic Hump and "Catch" after 8-hour shift in Cement Plant

DINGS NEW Non-Electric Magnetic Hump!

HERE'S a worker who takes no time off for anything, whose strength never ebbs, who gives two-fisted tramp iron protection—guides your dry material flow over the face of two powerful Dings Guaranteed Permanent Alnico Magnets and sends it on its way free of iron.



If the material you process is granular, powdered or fibrous and flows through circular or rectangular chutes or ducts, a Dings Magnetic Hump flanged to fit into existing ductwork may be your "Man." But this is only one of DINGS complete line of magnetic separators. See some of the others, left—and consult Dings for the best Job-Selected magnetic tramp iron protection for YOU.

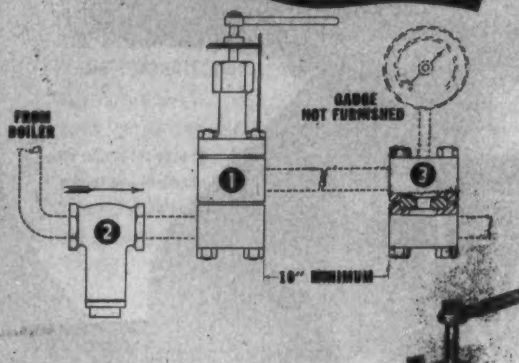
Send for Bulletin 653

DINGS MAGNETIC SEPARATOR COMPANY

4731 W. Electric Ave., Milwaukee 46, Wisconsin

When inquiring check CP 6710 on handy form, pgs. 2-3

Custom-Built... CONTINUOUS BLOWDOWN



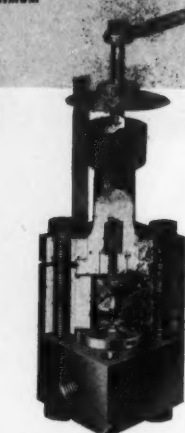
STRONG Dual-Orifice Assembly gives Greater Accuracy . . . Rugged Service!

Strong's Continuous Boiler Blowdown Assembly includes a Strong block steel Evertite® Valve (1), a strainer (2) and an orifice block (3), custom-built and accurately sized for your own job conditions.

The assembly is essentially two orifices arranged in series. The first orifice (valve) is variable . . . the second is fixed. Correct proportioning of orifices provides extremely accurate control and reduces wire drawing.

Strong Evertite steel valves have special Anum-Metl X seats and discs of 750 Brinell surface hardness for long life. Available for pressures to 1500 psi and temperatures to 800° F. or 6000 psi non-shock cold service.

Let us custom-size your continuous blowdown system. Send for Catalog No. 68-T and our Continuous Blowdown Check-Chart today!



Also available in outside screw and yoke.

STRONG, CARLISLE & HAMMOND COMPANY



1392 West 3rd Street
Cleveland 13, Ohio

ANUM-METL
Reg. Trade Mark

OTHER STRONG STEAM SPECIALTIES



Reducing Valve



80 Series Trap

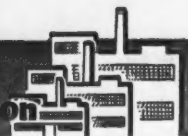


Strainer

STRONG

When inquiring check CP 6711 on handy form, pgs. 2-3

Expanding Chemical Production



Styrene monomer bulk goes to sea from Texas plant to Conn.

With the arrival of the firm's leased tanker containing the first bulk cargo of styrene monomer ever transported by an ocean-going vessel, the new plastics plant of The Dow Chemical Company at Allyn's Point, Conn., went into full production.

Construction of the plant was begun late in 1950, and limited production began last August. Occupying five acres on the Thames River, midway between New London and Norwich, the plant uses the chemical produced at the company's Texas Division facilities at Freeport, on the Gulf Coast.

Catalytic cracking unit in Texas adds 11,500 bpd to supply

An 11,500 bpd Houdrifiow catalytic cracking unit, begun late in 1951, has been put into operation at the El Paso refinery of the Standard Oil Company of Texas.

Synthetic rubber production grows with \$1.5 million program

Plans for a \$1.5 million expansion program in production of synthetic rubber have been announced by the Goodyear Tire & Rubber Company.

The proposed expansion, mainly an addition to existing Akron facilities, will make available additional reactors for synthetic rubber used in industrial, architectural, and highway paints.

Unit for dioctyl phthalate completed in Mass.

Monsanto Chemical Company has completed construction and is now operating a new dioctyl phthalate plant at Everett, Mass. Phthalic anhydride, raw material for the DOP unit, is manufactured in an adjoining unit at the Merrimac Division in the same city.

New research lab will explore pulp, paper possibilities

A \$400,000 laboratory for basic research work in the development of new pulp and paper grades manufactured from southern forests, was officially opened at Mobile, Ala., by the Southern Kraft Div., International Paper Co.

Three pulp pilot plants and laboratories for chemical analysis and chemical and physical research are included in the new building, as well as three controlled humidity rooms and facilities for photographic research and standard pulp and paper testing operations.

Expand plant facilities for output of sodium polyacrylate

B. F. Goodrich Chemical Company has expanded plant facilities at Cleveland, Ohio, for volume production of sodium polyacrylate, basic ingredient used in making soil conditioners.

Set aside \$1 million for nitrogen research, new buildings

A million dollar expansion program of its research and engineering facilities at Hopewell, Va., has begun to materialize for the Nitrogen Division, Allied Chemical & Dye Corp. The expansion will consist of new buildings, to be constructed shortly, for research on new products and processes in nitrogen and related fields and in petrochemicals. The new buildings will be next to the present laboratory.

Production begun at Monsanto plant for industrial resins

Production of industrial resins at the Monsanto Chemical Company's newly acquired plant at Port Plastics, Ohio, is now underway.

Operation of the plant, located on a 115-acre site on the bank of the Ohio near Cincinnati, will supplement those at the Plastics Division's headquarters at Springfield, Mass.

Bureau of Mines undertakes oil-shale project

A contract has been awarded by the US Dept. of Interior, Bureau of Mines, for the design of a catalytic refining demonstration plant for the department's oil-shale project at Rifle, Colo. The plant will be used for demonstrating refining of oil-shale distillates by catalytic means in reforming and treating processes.

\$54 million petrochem project marks initial step for Canada

Construction of a \$54 million chemical plant, the largest industrial venture ever undertaken in Alberta, Canada, is now proceeding on a 430-acre site on the Saskatchewan River eight miles east of Edmonton for the Canadian Chemical Co., Ltd.

The plant, an integral unit of Canadian Chemical & Cellulose Co. Ltd., is reported to be: 1) the first major development to use Western Canada's petroleum and natural gas reserves in a petrochemical operation, and 2) the first significant move in the establishment of a synthetic fiber industry in the western half of the North American continent.

On the plant site there will be three separate but integrated units. The chemical section, utilizing

petroleum hydrocarbons to be supplied by nearby oil refineries, will produce a wide variety of industrial chemical products including pentaerythritol, methanol and propylene glycol, cellulose acetate, and other compounds.

When the plant swings into production early next year, it is expected that the Edmonton unit will supply British Columbia with formaldehyde used at a rate of 8 million lb/year in Canada's plywood industry and currently being imported from the United States.

Plasticizer plant output shows first results of \$20 million project

A new plant at Neville Island, expected to boost Pittsburgh Coke & Chemical Company's plasticizer production to more than a million lb/month, is now in operation. The new unit represents the first production results in the firm's current \$20 million expansion program.

Phenol producing unit scheduled for California location

Construction contract has been awarded by Monsanto Chemical Co. for a phenol producing plant on an 86-acre site at Avon, Calif.

Using a process recently developed by the company, the proposed plant will be operated jointly by Monsanto's Western and Organic Chemicals Division. Production is expected early in 1954.

Begin \$10 million, 2-yr project for soda ash production

Preliminary work has begun on a \$10 million additional structure on the soda-ash manufacturing facilities at the Syracuse, N. Y. plant of Solvay Process Div., Allied Chemical and Dye Corp.

A near-duplication of another recently completed and dedicated soda-ash plant on the same site, the new facilities are expected to be completed in two years.

Construction is underway for \$5 million fertilizer unit

A \$5 million plant for production of a high analysis fertilizer by using a new process is being constructed at South Point, Ohio, by the Nitrogen Division, Allied Chemical & Dye Corp. Completion is expected by the summer of next year. The new product will have 36 per cent plant food, equally combined from nitrogen, phosphoric acid, and potash to make a 12-12-12 analysis.

New catalyst plant starts producing in N.J.

A new plant for manufacture of Type 3 catalyst to be used for up-grading naphthas to high-octane gasolines and the production of aromatics has been placed in operation at Paulsboro, N.J., by the Houdry Process Corp.

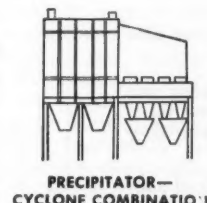
Initially, the plant will produce the new catalyst for other company plants now under construction having a total capacity of approximately 250,000 bpd.

Your Management wants to know...

How valuable dust recovery saves dollars

In every industry, from chemicals to food to steel, Buell engineers, working with plant engineers, have established an enviable 18-year record of turning unnecessary dust losses into substantial new profits. What's more, Buell Dust Recovery Systems uncover, for all American industry, these additional important advantages: improved product quality, smoother plant-community relations and higher employee morale.

To take advantage of Buell's background and experience in the highly specialized science of dust recovery, ask for further information about Buell's **3 basic systems** of dust collection. See how they can help you turn dust into dollars. Send for Buell's new, informative bulletin titled, "The Collection and Recovery of Industrial Dusts." Buell Engineering Co., Dept. 11-L, 70 Pine Street, New York 5, New York.



buell

ENGINEERED EFFICIENCY IN DUST RECOVERY

When inquiring check CP 6712 on handy form, pgs. 2-3



WILSONIZE TO ECONOMIZE



Here are seven good reasons why the Wilson Model R Cutter Head assures refineries and chemical plants faster, more thorough tube cleaning.

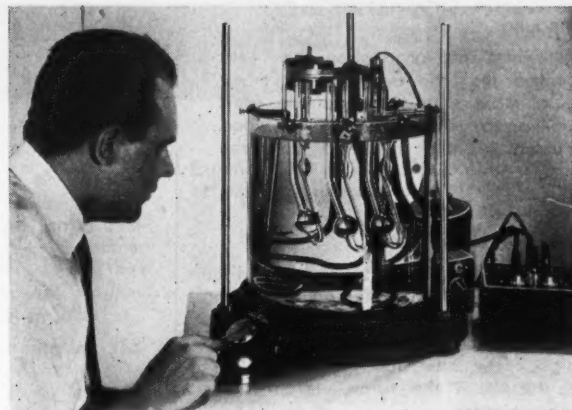
- 1. Renewable Cutter Pin Bearings.** No need to replace entire cutter head when pin bearings wear.
- 2. Reversible and Interchangeable.** When bearing wears on one side, just rotate it in its place for double service. When both sides are worn, it is only necessary to replace the worn bearing . . . not the whole set.
- 3. Faster Cutting Speeds.** The cutter pins revolve freely, new pin bearings reduce surface wear on the wheels—less friction all around.
- 4. Low, Easy Maintenance.** Self-aligning bearings are replaced with just a twist of the wrist. One nut opens the whole assembly . . . saves user's time . . . cuts downtime for tube cleaning.
- 5. Self-feeding and Non-tracking . . .** won't cut tube surfaces.
- 6. Extra Expansion.** The special cutter pin bearing provides for greater radial expansion . . . permits removal of deposits of more variable thickness . . . assures more thorough cleaning.
- 7. Made from the "solid"** . . . accurately made of alloy steel . . . greatest assurance of soundness . . . less likely to break in the tube. TW 609

THOMAS C. WILSON, INC.
21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.
Representatives in all principal cities
CABLE ADDRESS: "TUBECLEAN", NEW YORK

WILSON

TUBE CLEANERS • TUBE EXPANDERS

*For the
Laboratory*



Water bath with wide range of capacities and sensitivities is suitable for tests which require close control of temperatures

Versatile water bath components allow chemist to assemble "tailor-made" system

Various heaters, stirrers, thermostats, and other parts give choice of capacity and control

USES: For general uses of water bath systems and constant temperature circulating systems. Particularly useful for certain ASTM oil testing procedures.

Features: Comprehensive choice of standard parts permits assembly of "tailor-made" unit with various capacities or methods of control.

Description: The Fisher Unitized Water Bath System consists of various heaters, stirrers, thermostats, and other components as selected by the user.

A specific water bath system is initiated by the choice of one of three Pyrex brand glass jars, 12 inches in diameter and 12, 18, and 24 inches in height. Filled within three inches of the top they have capacities of 4.5, 7.5, and 10 gal respectively. Any of the jars can be set on the same heavy cast-metal base. Base and jar make up the basic bath assembly, to which other units are added as needed.

A set of three support rods matches each size of bath jar. Rods screw into base at equal intervals around jar. In addition to making other support

stands unnecessary, rods will hold apparatus at different heights.

A combination of several available heaters, cooling coils, stirrers, and thermoregulators permits any bath assembly to be held at constant temperature over range from 20 to 200°C. The 12-inch bath is used with a choice of four heaters: a special 75-watt heater designed for this bath, and others of 300, 500, and 750-watts. The 18 and 24-inch units use 300, 500, and 750-watt heaters of larger size. Cooling coils are also available for each of the bath units. A voltage regulator may be used in the heater line to vary output of the heaters. A different power stirrer is available for each size bath.

Four sensitive thermoregulators are available for use with any of the three sizes of water bath systems. Where highest sensitivity is not required, a bi-metallic thermoregulator is available which provides a rugged, inexpensive method of control. It does not require outside relays, and will hold temperature of bath within plus or minus 0.06°C. Three other regulators are used with a special electronic control unit. They are: 1) a mercury adjustable thermoregulator with a sensitivity of plus or minus 0.06°C over the full range of the bath; 2) a vapor pressure thermoregulator which has a sensitivity of plus or minus 0.02°C over a range from 4 to 201°C; and 3) a micro-set thermoregulator which combines a sensitivity of plus or minus 0.01°C over range from 10 to 104°C with simplicity of adjustment. Latter three regulators are equipped with tele-

phone-plug terminals which assure safe, easily changed connection with the control box.

Control circuits for stirrer, continuous heater, and intermittent heater are incorporated in small, compact electronic control unit. Circuit of heater-relay is designed to "fail safe" by disconnecting heaters if the power fails, if a tube burns out, or if the thermoregulator plug is accidentally withdrawn.

Other accessories include choice of two thermometer units, one covering range from -20 to 110°C and the other from -10 to 200°C. These come complete with special clamps that fit top of bath jar. Fluorescent lamp (ring form) is available for placing in base to illuminate jar from below with almost shadowless lighting and no "hot" spots.

Two special bath assemblies are available: 1) a kinematic viscosity bath for viscosity tests covered by ASTM D445 using Ubbelohde, reverse-flow, or Ostwald-Fenske viscometers, and 2) an assembly to be used in determination of foaming characteristics of crank case oils as outlined in ASTM D892.

(Water bath systems are products of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 6714 on handy form, pages 2 and 3.)

Measurements with densitometer allow quantitative techniques in paper chromatography . . .

paper guide on source holds and advances papergram for easy photocopying

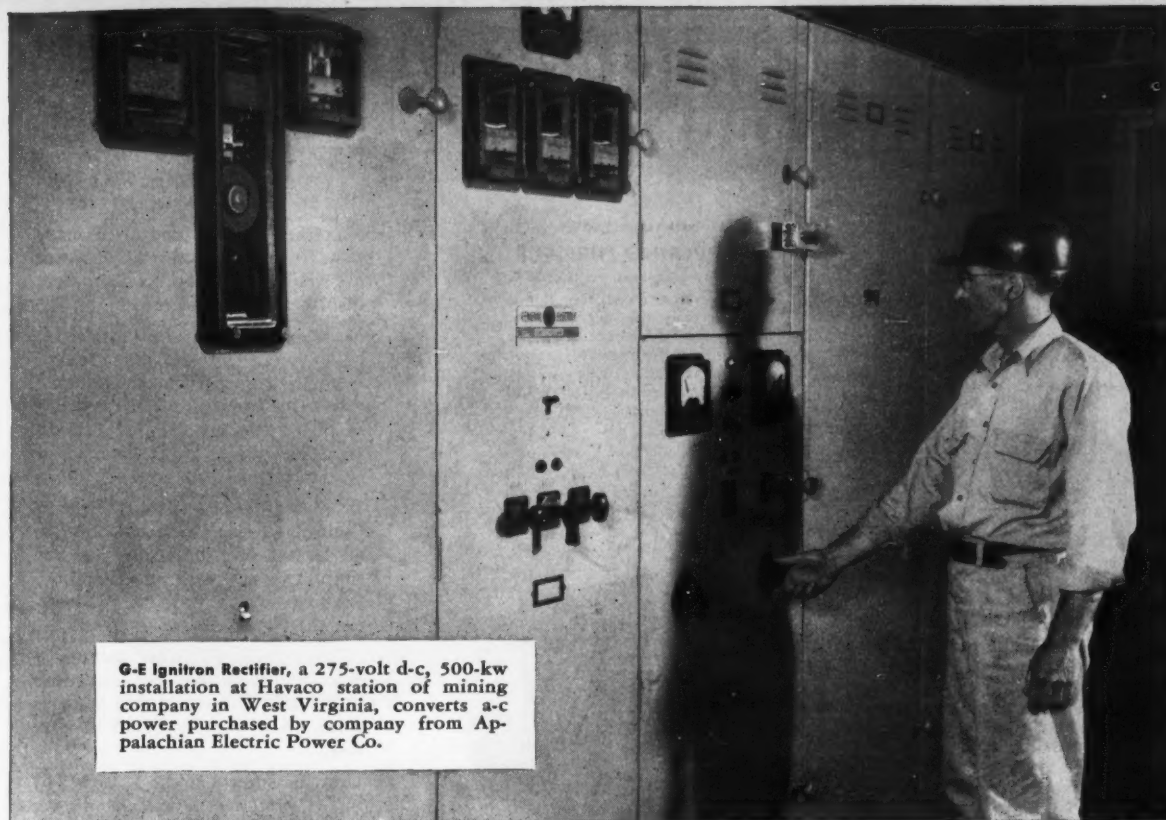
Uses: Paper chromatography is used in analysis for amino acids, sugars, vitamins, steroids, hormones, drugs, and numerous other organic and inorganic compounds.

Features: Densitometer allows quantitative measurement of papergrams (filter paper strip containing sample of compound being analyzed treated with suitable color-developing reagent). Maker claims "no drift" feature and extreme sensitivity which permits measurements with accuracies having extremely high statistical significance. Instrument is simple to operate.

Description: Complete instrument consists of photoelectric densitometer measuring unit with separate light source. Light source is equipped with convenient paper guide which holds and advances papergrams. Source is supplied with power by constant voltage transformer. Lamp with rheostat control, three apertures, and three

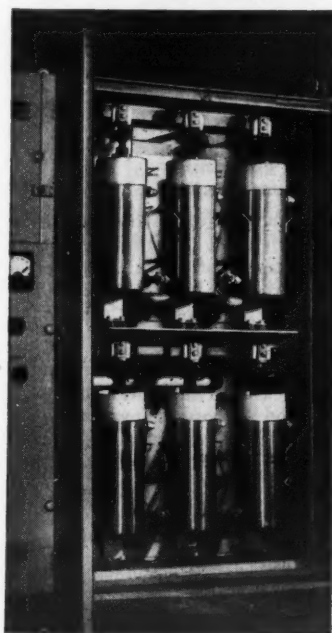
Wratten filters complete the source. Potentiometer in series with 6-volt lamp permits adjustment of filament temperature. Filament image may be focused with convenient knob on source. Synchronous motor is available on special order and may be used as attachment on paper guide to advance papergrams.

(Densichron Densitometer is a product of W. M. Welch Scientific Company, Department CP, 1515 Sedgwick Street, Chicago 10, Illinois . . . or for more information check CP 6715 on handy form, pages 2 and 3.)



G-E Ignitron Rectifier, a 275-volt d-c, 500-kw installation at Havaco station of mining company in West Virginia, converts a-c power purchased by company from Appalachian Electric Power Co.

8 years of dependable operation



Six tubes for power. Rectifier features simple design, no major moving parts to wear out.

G-E Ignitron Power Rectifiers, requiring minimum maintenance, operate at top efficiency under rugged mining conditions.

For round-the-clock service, year in and year out, G-E Ignitron Rectifiers give dependable d-c power under most adverse circumstances.

In the mountainous, isolated areas of West Virginia's mining country, for example, seven General Electric rectifier substations, all equipped with Ignitron Rectifiers, have serviced mines of a large coal producing company in the New River and Pocahontas fields since 1944. And over this 8-year period, the company reports, the G-E Ignitron Rectifiers have given safe, and near continuous service—with very low overall maintenance costs.

Proved-in-service G-E Ignitron Rectifiers are chosen for these hard jobs because they provide maximum

protection to operating personnel . . . possess an efficiency generally higher than rotating power-conversion units . . . have no major moving parts that need replacement or require extensive upkeep. And they are reliable. If regular inspection periods are maintained, G-E Ignitron Rectifiers can be left unattended, for months at a time, with the assurance they will give satisfactory service during all that period. Supplied as a complete packaged unit with transformer and metal-enclosed switchgear, the installation occupies minimum space.

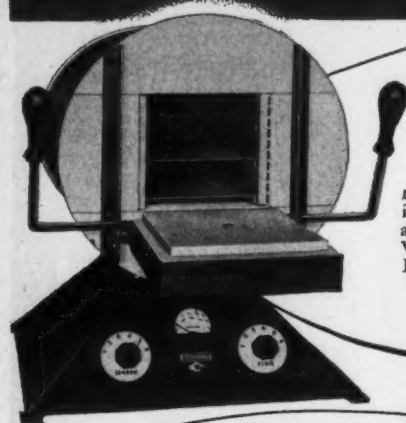
Call or write your nearest G-E sales office for information on a G-E Ignitron Rectifier to fit your d-c power requirements. General Electric Company, Schenectady 5, N. Y.

3246

GENERAL  ELECTRIC

When inquiring check CP 6716 on handy form, pgs. 2-3

3 GOOD TECHNICIANS IN YOUR LABORATORY

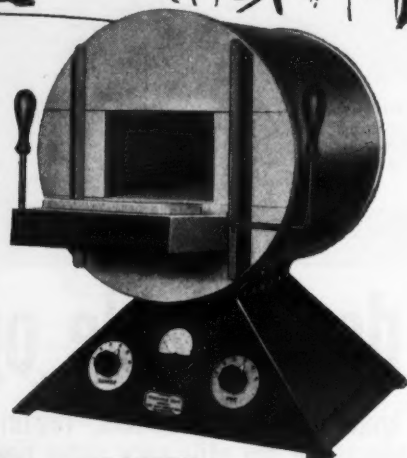


**"MULTIPLE UNIT"
TEMPERING FURNACE**
For Temperatures to 1250° F.
A high speed centrifugal fan
located in the rear of the
heating chamber supplies
rapid and uniform heat-
ing. Shelves and baffle
are easily removed.
Write for Bulletin
LAB-1049.



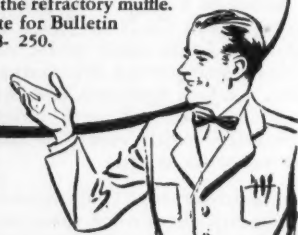
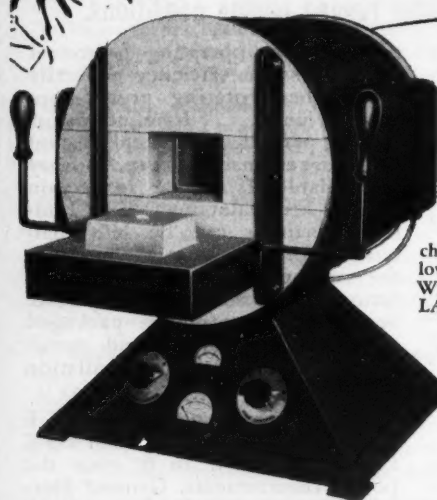
"MULTIPLE UNIT" MUFFLE FURNACE

For Temperatures to 1850° F.
For drying precipitates,
ash determinations, fu-
sions, ignitions, heating
metals and alloys, enamel-
ing, heat treating, and
experimental test
work. Available in
four standard sizes.
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HEVI DUTY "G-05-PT" FURNACE

For Temperatures
to 2600° F.
Designed for operation
at high temperature with
or without a protective
atmosphere. Heating ele-
ments are silicon carbide
rods extending across the
chamber, above and be-
low the refractory muffle.
Write for Bulletin
LAB-250.



HEVI DUTY ELECTRIC COMPANY

LABORATORY FURNACES **MULTIPLE UNIT** ELECTRIC EXCLUSIVELY

MILWAUKEE 1, WISCONSIN

When inquiring check CP 6717 on handy form, pgs. 2-3

LABORATORY

**Four-channel amplifier
has simple controls,
is versatile . . .**

response is flat ($\pm 5\%$) from
DC to 500 cycles per sec

Amplifier can be used with many
standard pickups for work on stress
& strain, vibration, acceleration,
displacement, pressure, etc.

Made to work into recording os-
cillographs (up to 18-channel)
amplifier has a frequency response
extending from 0 to 500 cps with-
in plus or minus 5%. Transients
lasting several microseconds or
longer can also be picked up by
the unit.

Controls of this 1-118 amplifier are
all located on front panel and are
simplified for ease of operation.
Locking device prevents inadvert-
ent change of settings.

A carrier type, amplifier operates at
3 kc with a power not exceeding
one watt. Output, at full scale, is
5 ma when working into a 40-ohm
load.

Unit measures $17\frac{1}{2} \times 12\frac{1}{2} \times 9\frac{1}{2}$
inches, weighs 35 pounds. Power
requirement is 115v — with mod-
els available for operation at 50,
60, and 400 cps.

(Type 1-118 Carrier Amplifier is a
product of Consolidated Engineer-
ing Corporation, Dept. CP, 300
N. Sierra Madre Villa, Pasadena
8, Calif. . . or for more informa-
tion check CP 6718 on handy form,
pages 2 and 3.)

Tells of economies of instrumentation

Manufacturer of instruments for
research and control reports
advantages of installation of
direct-reading spectrometer in
control laboratory of a major
steel mill.

Article summarizes "before-and-
after" aspects of routine opera-
tions on the basis of instrumenta-
tion of analytical methods.

Several standard and new prod-
ucts are described and illustrated
in eight-page bulletin which
features above report. "Better
Analysis," Vol 3, No. 3, is
issued by Baird Associates, Inc.,
Department CP, 33 University
Road, Cambridge 38, Massa-
chusetts. When inquiring specify
CP 6719 on handy form, pages
2 and 3.

SULPHUR USERS

Many former users of sulphur have found that
Sulphur Dioxide can be effectively and economi-
cally substituted for sulphur. Many industries have
made this conversion and the results have been
most satisfactory. Sulphur Dioxide, can perhaps,
be just as effectively adapted to your operation.
One of our representatives would be glad to con-
sult with you—no obligation to you, of course.

SULPHUR-DIOXIDE
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QUALITY
SO₂

For further details,
wire, phone or write
the Tennessee Corporation,
Grant Building, Atlanta, Ga.

TENNESSEE T C CORPORATION
619 Grant Building. ATLANTA, GEORGIA

When inquiring check CP 6720 on handy form, pgs. 2-3



**Finnegan
Can Keep
'Em Rolling!**

There's no more "Off Agin . . . On Agin . . .
Gene Agin . . . Finnegan" when you operate

ABBÉ JAR ROLLING MACHINES

The machine keeps on rolling when the time
comes to take off or put on small jars. Even
with large jars, when the machine has to be
stopped, jar changes take only a few seconds
. . . there are no time consuming unstrapping
and adjustments.

Each jar gets its full grinding cycle and is
quickly removed when finished. The rest of the
jars on the machine are not affected. And you
can use jars of different sizes, too.

If you want to save time and labor
on jar grinding, ask for Bulletin #63
on Abbé Jar Rolling Machines.

ABBÉ ENGINEERING CO. 46 CHURCH STREET
NEW YORK 7, N. Y.

Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 6721 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Non-destructive X-ray method
determines trace elements
in thin films . . .**

method may be used for extremely small quantities of material in form of films, dusts

Uses: Identification and quantitative analysis of minute amounts of elements present in very thin film or small deposits. Determinations have been made on thin films of metals on plastic and metal base materials. There are potentialities for evaporation control through rapid analysis of rates of deposits from solvents, as well as applications in fields of air contamination and industrial flue recovery.

Features: Method is non-destructive; the films are not ruptured or decased, as in case of other methods.

Description: The technique of micro X-ray spectrography utilizes a standard X-ray spectrograph employing tungsten radiation, but using a special analyzing crystal with newly developed optics. Each specimen is scanned with the X-ray spectrograph and the spectrum recorded through an angular range suitable for the particular elements involved. Intensity measurements are made with the scaler and a fixed count operation.

Whereas in the case of spark spectrographs the film is ruptured or dissipated at the point where the arc strikes, no rupture or decasing of the film results from analysis with X-ray spectrograph. Therefore, the latter method is not likely to result in an erroneous determination as a result of evaporation of the metal.

(Technique and equipment were developed by the Research and Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mt. Vernon, N. Y. . . . or for more information check CP 6722 on handy form, pages 2 and 3.)

**Motor-driven pump provides
faster delivery of acids
from carboys . . .**

fits all standard carboys; special plugs and adapters allow use with special containers

Uses: To pump acids and other liquids from carboys, drums, and barrels.

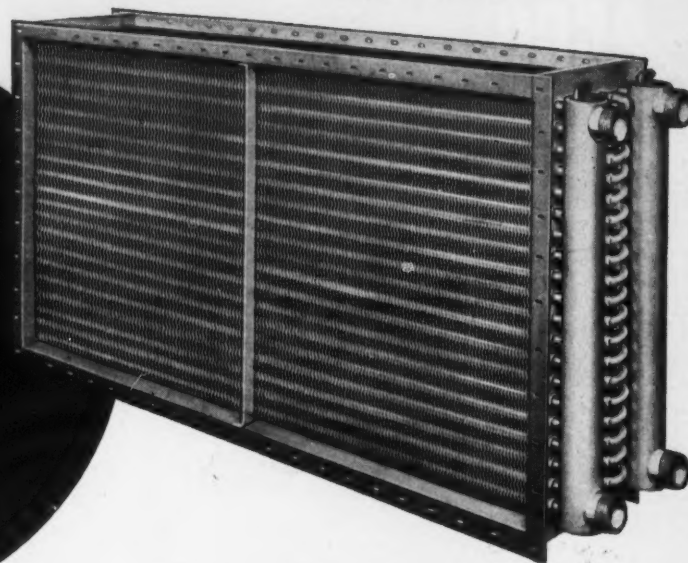
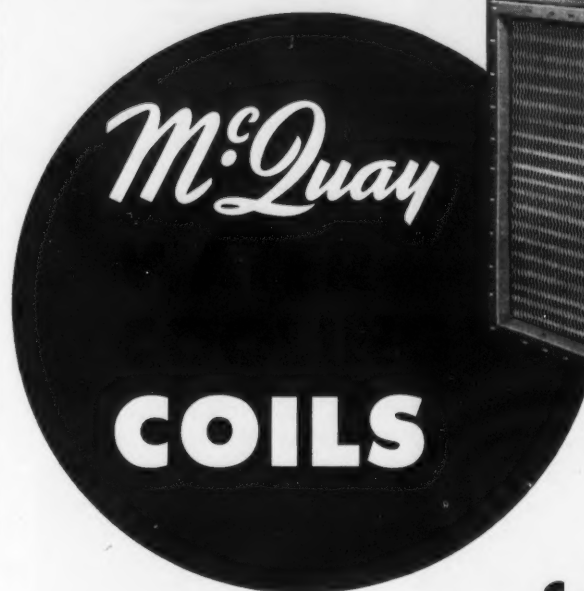
Features: As supplied pump will fit all standard carboys. In addition special plugs and adapters are available to adapt unit to special containers — aluminum, stainless steel, and plastic.

Description: Motor-driven acid pump is designed for users who require a faster flow of acid and other liquids, and for those who in some cases must elevate the flow to a height of 12 feet.

Pump is self-contained, portable, compressor- and motor-driven, fully equipped with safety air valves which prevent pressure from exceeding 15 lbs.

(Pump is a product of General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 6723 on handy form, pages 2 and 3.)

NEW STANDARD OF QUALITY!

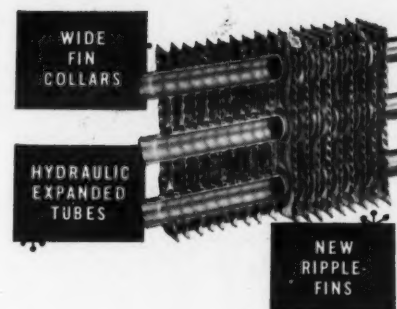


...featuring NEW RIPPLE-FIN CONSTRUCTION

Now, the new, improved Ripple-Fin makes McQuay Water Cooling Coils even more rugged and efficient. Consider these advantages of the new Ripple-Fin Coil construction:

- Easy to drain of condensed moisture. Water hang-up has been sharply reduced on coils requiring vertical (up) air flow.
- Produces a rippled air flow pattern . . . closer and longer contact between the air stream and the coil surface, preventing air by-pass and producing faster heat transfer.
- Permits increased face velocities without danger of moisture carry-over from fin surface to air stream.
- Offers greater heat transfer surface.
- Gives higher flexible strength with minimum air friction and cleaner operation.
- Copper tube headers provide inherent flexibility.
- Hydraulic expansion of all tubes into fins having wide smooth collars assures permanent mechanical bond.

Available in a wide variety of styles and sizes. Standard and special coils for cold water, brine, direct expansion, refrigerant condensing, steam, hot water, and other applications. Write McQuay, Inc., 1615 Broadway St. N.E., Minneapolis 13, Minn. Representatives in principal cities.



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IN *McQuay* COILS!

McQuay INC.

HEATING • AIR CONDITIONING • REFRIGERATION



When inquiring check CP 6724 on handy form, pgs. 2-3

an
ACCO
product



No. 6056
600-lb. R-P&C
Forged Steel
Gate Valve

Premium Quality Features

• Body, bonnet, yoke, wedge, and hand-wheel of this sturdy R-P&C Gate Valve are forged steel. Wedge is heat-treated. Seating surfaces are smoothly ground and chromium plated for near diamond hardness. Stainless steel swinging gland eye-bolts and nuts won't corrode or freeze. Furnished in 1/4" to 2" sizes. Screwed, flanged, or welded end.

It's a premium quality valve but NOT premium priced. See your R-P&C distributor or write nearest R-P&C district office.

ACCO



R-P&C VALVE DIVISION
AMERICAN CHAIN & CABLE

Reading, Pa., Atlanta, Baltimore, Boston, Chicago, Denver,
Detroit, Houston, New York, Philadelphia, Pittsburgh,
San Francisco, Bridgeport, Conn.

R-P&C
valves

When inquiring check CP 6725 on handy form, pgs. 2-3

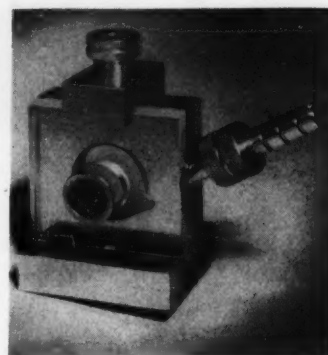
LABORATORY

**Will produce sphere
from any irregular
solid piece . . .**

requires only compressed air
for operation

Device will reduce an irregular fragment of almost any solid material to a sphere in a few minutes. Source of compressed air (60 psi max) is requirement for operation. Uniformity of sphere produced is about 1%. Unit will grind spheres ranging from 0.1 to 0.004" diameter.

Model 440 Bond Sphere Grinder consists of a metal plate having a cylindrical chamber closed at ends with Lucite. Surface of cylinder is lined with abrasive paper of



Sphere grinder is simple and speedy

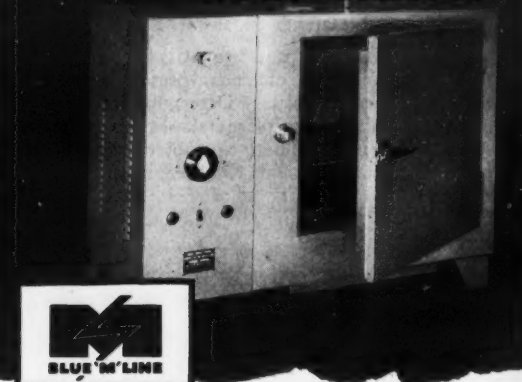
variable grade. High speed jet or air is introduced into chamber tangentially, causing fragments to be spun against abrasive at high velocities.

One plate has an air-escape hole closed by a disk of fine textile cloth backed by a wire cloth and nut. Simple clamp which may be quickly opened allows operator to gain access to chamber without difficulty.

The softer the material, the faster the grinding. Fragments of ethylene diamine tartrate were made spherical in 1 1/3 minutes, whereas those of nickel ferrite, which are considerably harder, required 3 minutes. Speed of grinding and surface finish, which may be all the way to a polish, can be controlled by selection of abrasive grain size, air pressure, and time of run.

(Manufactured by Lovins Engineering Co., Dept. CP, 8203 Cedar St., Silver Spring, Md. . . or for more information check CP 6726 on handy form, pages 2 and 3.)

**for more uniform
heat control**



Mechanical Convection

UTILITY OVENS

Full control of all heating factors . . . insures results and saves time in procedures involving baking, heating, drying or sterilizing.

Selective Wattage . . . the Power Selector Switch controls heat electrically to within 1/2°C.

Adjustable air speed . . . velocity is controlled from 50 to 250 feet per minute with about 50 air changes per minute.

Symmetrical Heating . . . Horizontal Air Flow
The special Modella heating element is distributed over the entire bottom of the oven, and air is introduced horizontally at various levels, to provide maximum uniformity of temperature distribution.

Stainless steel interiors . . . heavy gauge steel gray finished exterior, heavy duty ball bearing motor . . . Blue M Ovens are completely wired and solidly built throughout. Guaranteed for 5 years.

Made in two temperature ranges
35°C to 180°C and 35°C to 288°C
8 sizes in each range

For complete information see your
local dealer or write for Bulletin



BLUE M ELECTRIC COMPANY
306-308 West 69th Street, Chicago, Illinois

When inquiring check CP 6727 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Clarification, concentration,
separation, and mixing —
all in one unit . . .**

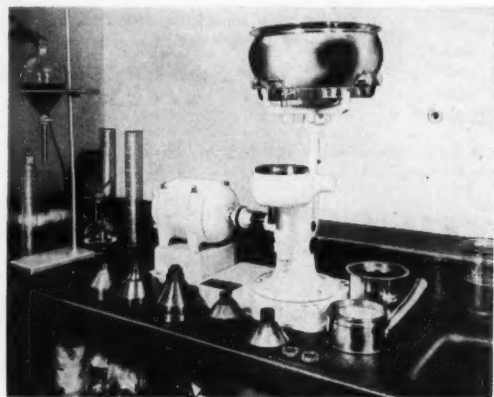
versatile centrifuge unit features four separating bowls which are interchangeable on one frame

Uses: Unit is designed for use in clarification and removal of solids from liquids; mixing, homogenizing, and emulsifying of liquids; liquid-liquid extraction; liquid-liquid separation and liquid-liquid separation with solid contents (purification); and concentration of various liquids.

Features: All types of separations may be done in this one unit by utilizing four different types of separating bowls which are designed to be interchangeable on one frame.

Description: The Centriwesta Universal Laboratory Centrifuge, model LWA-205, finds wide use in chemical processing labs, commercial labs, research organizations, industrial labs, and other technical organizations.

Unit consists of a mounting which supports a basin-type reservoir; a revolving bowl assembly, rotating at



Versatile centrifuge-separator unit permits all types of separations in one machine

12,000 rpm; and a 0.6-hp motor. Available in tinned material or type 316 stainless steel, the unit can be equipped with special heaters for maintaining constant temperature in the basin.

Four types of interchangeable bowls include: 1) chamber bowl for clarification and removal of solids; 2) mixing bowl for mixing, homogenizing, and emulsifying of liquids, or, when combined with disc bowl, for liquid-liquid extraction; 3) disc bowl for liquid-liquid separation; and 4) nozzle bowl for liquid concentration.

Centrifuge unit provides results which can be extrapolated to commercial machines, and allows process experimentation and development to be made with small amounts of product. The hourly capacity of the separator depends on viscosity, temperature, and specific gravity, as well as on the amount of solids and water contained in the liquids, and the desired degree of purity.

(Unit is distributed by Centrico, Inc., Dept. CP, 233 Broadway, New York 7, N. Y. . . . or for more information check CP 6728 on handy form, pgs. 2-3.)

Get more of the **FULL RATED PRESSURE** with



Our 50th
Anniversary

engineered

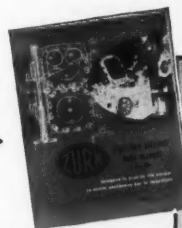
LOW PRESSURE DROP STRAINERS

**THEY PERMIT HIGH RATES OF FLOW WITH
REMARKABLY LOW PRESSURE DROP (LPD) AND
IMMEASURABLY IMPROVE THE HANDLING OF
FLUIDS (OIL, CHEMICALS, WATER) THROUGH PIPE LINES**

WHATEVER IS DONE to compensate for a loss of pressure usually results in an increased cost of handling liquids in pipe lines. But, compensation for the loss of pressure is usually unnecessary when Zurn Engineered Strainers are installed. Instead, a *reduction of pressure loss* is usually obtained. Zurn Low Pressure Drop (LPD) Strainers are design improved for correct circularity; have smooth inner walls combined with correctly sized and perforated baskets which reduce pressure loss and afford maximum protection for all types of mechanical units connected with pipe lines.

Zurn Strainers, are held to close manufacturing tolerances for materials, shape, and dimensions assuring the utmost in strength and safety. Zurn Strainer applications include fluid handling lines for lubricating and fuel oil, and oil during the refining process; a wide range of chemicals produced and used by the various process industries; public utility power plants; power stations; industrial plants; municipal water systems; ships and high temperature, high pressure installations. Zurn Fluid Handling Engineers are available for consultation on your fluid handling problems.

Write for Pipe Line Strainer Manual
No. 951, including previously unpublished pressure drop data.



J. A. ZURN MFG. CO.

INDUSTRIAL DIVISION • ERIE, PA., U. S. A.
In Canada: Canadian Zurn Engineering Ltd., Montreal, P. Q.

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Zurn Sinter Strainer.
Available in offset and
straight-through types.

Zurn "Y" Type Strainers
available in any cast
material and for high
pressures.

There is a Zurn Strainer for Every Fluid Handling Purpose.

J. A. ZURN MFG. CO.

Industrial Division; Erie, Pa., U. S. A.

Please send me Pipe Line Strainer Manual No. 951

Name _____

Position _____

Company _____

Street _____

City _____ State _____

Please attach to your business letterhead—Dept. CP

When inquiring check CP 6729 on handy form, pgs. 2-3

why THE SPROUT-WALDRON

SAWTOOTH CRUSHER

CAN SOLVE

MANY OF

YOUR

COARSE

SIZE REDUCTION PROBLEMS:

because of its unique design, the Sprout-Waldron Sawtooth Crusher can provide either a shredding, tearing or shearing action. The type of action delivered depends upon the characteristics of the material being processed and speed differential at which rolls are run.

because of its shearing action, the S/W Sawtooth Crusher can perform many size reduction operations with a minimum of fines.

because of its tendency to pull materials into and through the reduction elements, the S/W Sawtooth Crusher is used extensively in breaking up sheeted materials as they come from cooling conveyors or drier belts.

why not write for complete details about how the S/W Sawtooth Crusher can help to solve *your* coarse size reduction problems? Our wide experience in solving *many* types of size reduction problems in the chemical processing and allied fields is always at your service. Write to Sprout-Waldron & Co., Inc., 10 Logan St., Muncy, Pennsylvania.



SPROUT-WALDRON

The Best in PROCESSING EQUIPMENT Since 1866

When inquiring check CP 6730 on handy form, pgs. 2-3

LABORATORY

Torque balances use system to eliminate axle friction . . .

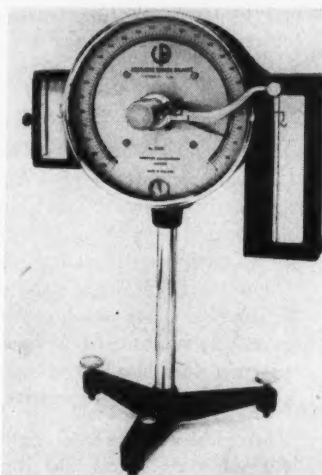
available with capacities from 1 mg to 20 gm

Uses: Suitable for use where a large number of accurate weighings must be done.

Features: Patented torsion system is designed to eliminate mechanical axle friction.

Description: Torque balances are available with capacities from 1 mg to 20 gm with sensitivities ranging from 0.002 to 0.02 mg.

Unit incorporates damping device to enable operator to make weighings more rapidly. However, de-



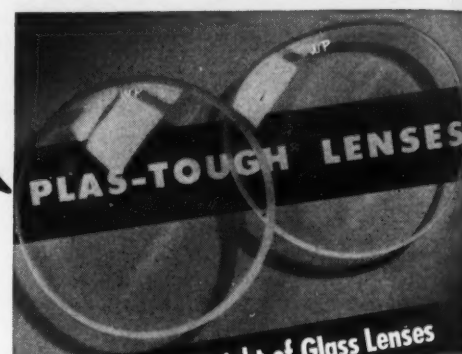
Torque balances are available in wide range of capacities and sensitivities

vice does not affect sensitivity of the balance. Other features include: eye level reading, resistance to shock, attractive stand enabling specific gravity weighing, and reading device without vernier.

(Balances are distributed by Ohaus Scale Corp., Dept. CP, 1050 Commerce Ave., Union, N. J. . . . or for more information check CP 6731 on handy form, pages 2 & 3.)

Nomograph for
Mutual Solubilities of
Light Hydro-carbon-Water Systems
on page 176

New WILLSON®



Only Half the Weight of Glass Lenses

• 6-Curve—50 mm. Round

• 6-Curve—P3 Drop Oval—44 and 47 mm.

Add extra comfort to your safety goggles and spectacles with these lightweight, extra tough plastic lenses. Improved surface hardness gives unusual resistance against pitting, scratches, abrasion and many industrial acids that would mar ordinary plastics. Plas-Tough® lenses meet Federal Specifications for impact resistance and light transmission. Replace with Plas-Tough®!

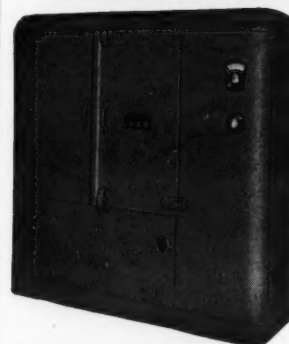
WILLSON PRODUCTS, INC.

227 Washington Street • Reading, Pa.

Write
for
Descriptive
Folder

When inquiring check CP 6732 on handy form, pgs. 2-3

accuracy
at High Operating Speed with
Despatch LABORATORY OVENS



Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

Chemical and analytical, drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13"x13" to 37"x25"x50".

- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

DESPATCH
Established 1902

Manufacturers of Ovens For All Purposes
ASK FOR BULLETIN No. 106

343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 6733 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"Thimble-size" device measures high frequency shock and vibration . . .

small size and weight of unit permit testing small components under actual or simulated conditions

Uses: Designed to measure high frequency shock and vibration.

Features: Unit offers advantages of combination of small size and weight in addition to large output.

Description: The Endevco Accelerometer is designed to measure high frequency (5000 cps) shock or vibration with indication or recording on cathode ray or galvanometer oscillographs and vacuum tube voltmeters.

The instrument gives self-generated output of 5 mv per G. The output is flat (plus or minus 5%) over range from 5 to 5000 cps, and stable to within 5% over temperature range from minus 20 to plus 70°C.

Model 2201 (general purpose unit) is made of stainless steel with a weight of 0.5 ozs and output of 5 mv per G. Model 2202 is a special, lightweight unit weighing 0.3 ozs. Model 2203 is a large output unit generating 10 mv per G.

(Units are products of Endevco Corp., Dept. CP, 180 E. California, Pasadena 1, Calif. . . . or for more information check CP 6734 on handy form, pages 2 and 3.)

Temperature-humidity cabinet designed to avoid overloading air with moisture . . .

incorporates relay which gives intermittent atomization and constant humidity

Uses: For tests requiring constant temperature and humidity.

Features: Manufacturer claims that method of control makes it possible to hold humidity within one degree wet bulb.

Description: Aire Regulator temperature and humidity cabinets are available in a temperature range from 40 to 150°F and controlled wet bulb.

Temperature is controlled by thermostats which turn on heaters or open valves admitting a coolant. Humidity is controlled by wet bulb device which atomizes water into a separate chamber through which air is circulated.

Incorporated into the cabinets is a method of control which avoids overloading air with moisture during the lag waiting for wet bulb thermostat to respond. During this period atomization is controlled by relay which opens the spray valve intermittently for a few seconds at a time. Result, according to the manufacturer, is a flat line on the chart recording humidity instead of "peaks" and "valleys".

(Cabinets are products of Food Technology, Inc., Dept. CP, 5903 Northwest Hwy., Chicago 31, Ill. . . . or for more information check CP 6735 on handy form, pages 2 and 3.)

NEW!

**LUNKENHEIMER
GLAND-TYPE
BRONZE NEEDLE VALVES**

*with fine thread-pitch
for precision throttling*

● **WHAT'S NEW ABOUT THEM?**

They have a new gland follower . . . they're redesigned from handwheel to seat opening . . . and yet they're competitive in price with non-gland valves.

● **HOW ARE THEY FOR INSTRUMENTATION?**

Perfect. The handwheels lend themselves to delicate fingertip control. Fig. 1565 has a special indicator handwheel with numbered graduations and a spring lock, if you prefer. They're compact, to fit behind instrument boards, and they have a very fine thread-pitch for close regulation. The seat angle is 30°. They handle 200 lbs. Steam; 400 lbs. W.O.G.

● **HOW ABOUT THE STEMS?**

Take your choice of "Stemalloy"* or steel in the globe design. "Stemalloy"* is Lunkenheimer's exclusive wear-resisting bronze alloy. Steel stems are cadmium-plated to resist rust.

● **WHERE CAN YOU FIND OUT MORE?**

Ask for Lunkenheimer's new Needle Valve Bulletin 568. Your distributor has it, or we'll send you a copy. Write The Lunkenheimer Company, Box 360C, Cincinnati 14, Ohio.

*Patented alloy

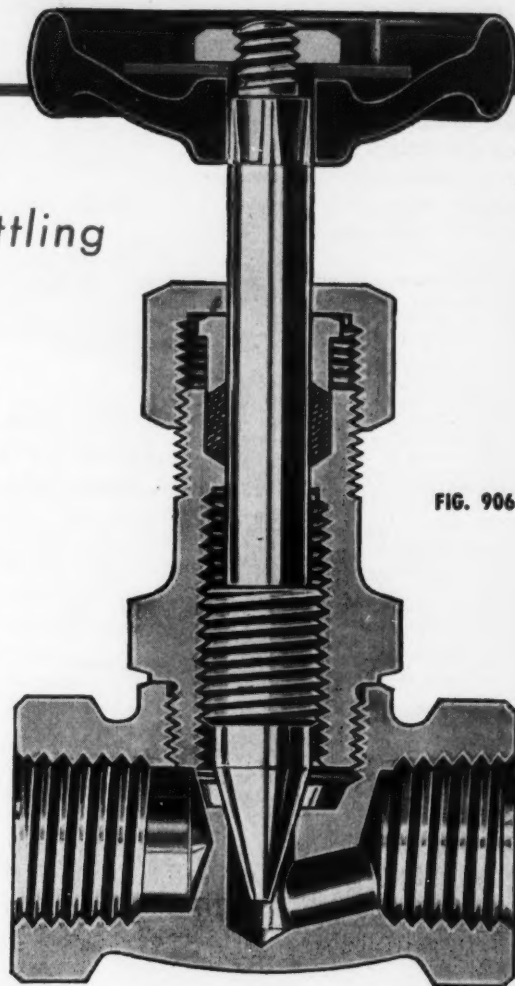


FIG. 906



BRONZE • IRON • STEEL

LUNKENHEIMER

THE ONE *Great* NAME IN VALVES

When inquiring check CP 6736 on handy form, pgs. 2-3

NEW HAND CALCULATOR

**AMAZINGLY FAST
AND ACCURATE!**

"CURTA"

Portable Calculator

**IMPORTED — Made by Swiss watchmakers
A NECESSITY FOR EVERYONE
WHO WORKS WITH FIGURES**

- Carries to Five Decimal Places
- Totals to 99 Billion
- Adds • Subtracts • Multiplies •
Divides • Square roots • Cubes •
Factors • Percentages

The Curta Calculator is so fast it pays for itself over and over again in time saved. It combines the portability of a slide rule with the speed and accuracy of large desk calculators.

A fine precision instrument, sturdily built of anodized steel to give years of service. Weighs only 8 ounces. Absolutely accurate. Figures can be checked and rechecked on 3 sets of dials — guaranteed for one year.

CURTA CALCULATOR CO., 3851 W. MADISON, DEPT. B, CHICAGO, ILL.

When inquiring check CP 6737 on handy form, pgs. 2-3



**ORDER NOW ON 10 DAY
TRIAL CHECK
MONEY
ORDER MONEY BACK
IF NOT SATISFIED**

With Rubber Lined Metal Case **\$139.65** Residents of Illinois add \$2.80 Fed. Tax State Tax

OR

**WRITE NOW FOR COMPLETE
DESCRIPTIVE LITERATURE**

LABORATORY

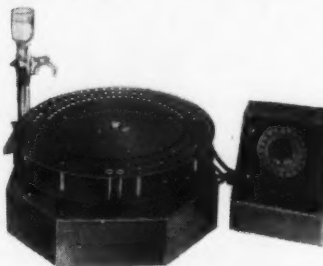
**Fractions collected
automatically by
64-position unit . . .**

liquid fraction collection is no longer a manual operation

Uses: Unattended fraction collection for all flowing liquids.

Features: Unit eliminates time-consuming manual collection of fractions.

Description: Incorporated in the automatic fraction collector is an interval timer which indexes the reel and stops each tube under the dispenser for the desired inter-



Automatic 64-position fraction collector eliminates time-consuming manual collection of liquid fractions

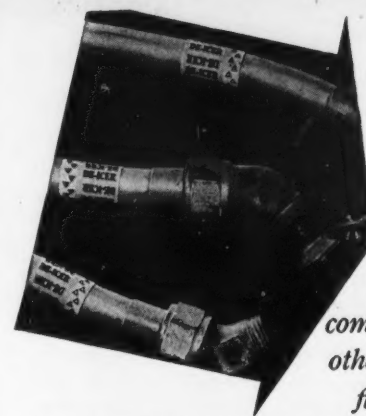
val pre-set on timer. Unit controls volume dispensed. Reel has 64 positions in its circumference and is designed for holding tubes, bottles, or micro centrifuge cones. Optional diverter arm provides for dispensing to all three rows at one setting.

(Unit is a product of Microchemical Specialties Co., Dept. CP, 1834 University Ave., Berkeley, Calif. . . . or for more information check CP 6739 on handy form, pages 2 and 3.)

Bulletins describe lab apparatus

Two booklets describe comprehensive line of laboratory equipment. Bul 1000 contains 18 pages of factual information regarding lab furnaces, furnace controls, hot plates, combustion units, carbon determinators, timers, flow meters, and parts for various units. Bul 1010 gives brief description of sulfur determinator designed for use in analysis of ferrous metals.

Bulletins are issued by Lindbergh Engineering Co., Dept. CP, 2450 W. Hubbard St., Chicago 12, Ill. When inquiring specify CP 6740 on handy form, pages 2 and 3.



**new...
efficient
method of
marking
fuel, oil,
gas, hydraulic,
water, oxygen,
compressed gas and
other industrial
flow lines**

Speed production, maintenance and repair operations with E-Z Code Fluid Line Markers. Extensively used in the aviation industry, E-Z Codes are now being used as flow-line markers in many industrial applications.

E-Z Codes are pressure-sensitive and are applied without moistening with fingertip pressure. They will not pop, peel or curl even in extreme changes of heat and humidity. They are available in standard symbols and codes for all types of flow-lines. They conform to the new international AND-10375 as well as AAF-27643 and can be produced to your size and printing specifications. Learn the facts on E-Z Code Fluid Line Markers.

**SEND FOR SAMPLES AND DETAILS
E-Z CODE SELF-ADHESIVE
MARKERS**

Western Lithograph Co., Dept. CP-12, 600 E. Second Street,

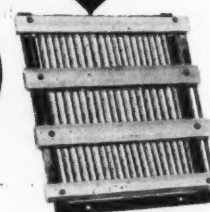
Los Angeles 54, Calif., Box 3804, St. Louis 22, Mo.

When inquiring check CP 6741 on handy form, pgs. 2-3

For a Thousand and One Products



**"Folded-and-Formed"
Heating Elements**



In Standard or Custombuilt Racks, are demonstrating their unequalled efficiency and economy, every day, in a wider variety of products. . .



EVERYTHING from Hamburger Grills to Television Tube Annealers . . . Ovens, Dryers, Kettles, Calibrating Tanks, Hot Air Ducts . . . the list is long and growing longer. What is YOUR heating problem? Write for "Folded-and-Formed" facts and figures.

TREN INC
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA

When inquiring check CP 6742 on handy form, pgs. 2-3

CHEMICAL PROCESSING

*for your New Laboratory, or...
for Expansion*

METALAB offers you
the Finest in
LABORATORY EQUIPMENT
WITHIN YOUR BUDGET



Let Metalab advise you on

- How to plan your Laboratory for greater efficiency.
- How Interchangeable Sectional Units are used.
- How to get the most for your laboratory budget.

Our new modern plant is geared to give you the close cooperation and rapid service you require.

Rush your problems to us today!

Write for our complete catalog on Laboratory Furniture and Equipment.

**SECTIONAL LABORATORY FURNITURE
and EQUIPMENT by**

METALAB
Equipment Corp.

230 Duffy Ave., Hicksville, L. I., N.Y.

When inquiring check CP 6738 on handy form, pgs. 2-3

Grating monochromator permits accelerated life tests of paints, enamels . . .

three types of light sources permit use of unit for variety of testing conditions

Uses: Designed to permit accelerated life tests of paints and enamels.

Features: Three types of light sources which provide light of high intensity and spectral purity are available for use with unit.

Description: Grating monochromator produces light which is dispersed by a precision grating with an efficiency of approximately 65% at 2650A. Light is condensed by concave collimating condensing mirror to exit slit and is collimated for all wavelengths.

Grating has ruled area 100 mm square, with either 600 or 1200 grooves per mm, as specified. Linear dispersion is 3.3μ per mm for 600 grooves per mm grating and is increased to 1.6μ per mm in 1200 groove grating. Three light sources are available for use with the unit: 1) high intensity mercury arc for ultra-violet microscopy; 2) ribbon filament for work in visible region of spectrum; and 3) hydrogen arc for work requiring continuous spectrum illumination in the ultra-violet region.

(Monochromator is a product of Bausch & Lomb Optical Co., Dept. CP, Rochester, N. Y. . . or for more information check CP 6743 on handy form, pages 2 and 3.)

Metals can be observed under reflected light with bright and/or dark field . . .

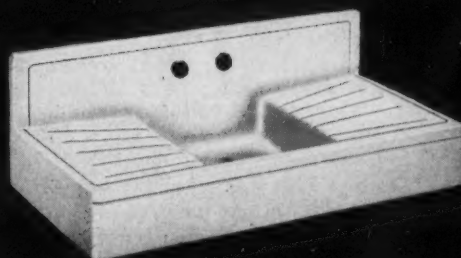
in addition to observation with polarized light

Uses: For microscopic examination of metals.

Features: Can be used in working with reflected light (bright or dark field), reflected light (bright and dark field), as well as polarized light. Transition from ordinary light to polarized light is instantaneous. Other features include: 1) interchangeable body tube allowing use of straight monocular or inclined binocular observation tubes (190 mm mechanical tube length); 2) vertical illuminators for bright and dark field or simplified ones for either bright or dark field; 3) interchangeable object stage — both square and round models are available.

Description: Reichert Metallographic Microscope "Me CSM" has stand with self-locking inclination joint. Coarse adjustment is by rack-and-pinion motion, fine adjustment is by micrometer. Upper portion has 95 mm outward sweep and guideway for interchangeable bodies. Large, square mechanical stage (No. 29-A) has stage insert, measures 125 x 120 mm. Total travel height adjustment is 45 mm. Other models, with similar features, but with some modifications are available.

(Available through William J. Hacker & Co., Inc., Dept. CP, 82 Beaver St., New York 5, N. Y. . . or for more information check CP 6744 on handy form, pages 2 and 3.)



High-fired "U. S." White Chemical Porcelain is the finest made. It is inert to all chemicals except hydrofluoric acid and hot caustics. It is structurally strong and highly resistant to thermal shock. It is non-porous, iron-free and completely non-toxic. It is virtually ageless. Its gleaming white surface assures solution visibility—cleans as easily as a china dish. Write today, for further information on U. S. Stoneware's standard and custom-made porcelain processing equipment.



ACID ELEVATORS
BALL MILLS
COCKS
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EVAPORATING DISHES
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JARS
KETTLES
LINERS
MILL JARS
MIXERS
PHOTOGRAPHIC EQUIPMENT
PIPE AND FITTINGS
POTS, PUMPS
PUMP PARTS
ROLLS
SCRUBBERS
SINKS
SLEEVES
STILLS
STORAGE VESSELS
SUBLIMING DISHES
SUPPORT PLATES
TANKS
TOURILLS
TOWERS
TOWER SECTIONS
VALVES, VATS

PROCESS
EQUIPMENT
DIVISION



U. S. STONEWARE

AKRON 9, OHIO

27-D

When inquiring check CP 6745 on handy form, pgs. 2-3

to control A-C operated equipment



The Type V-5MT VARIAC is one of the more popular models, furnishing 860 watts output with output voltages from zero to either 115 or 135 volts, on a 115-volt line. It is supplied with protective case, 6-foot line cord, convenience outlet and line switch.

Price: \$25.00

WRITE for the VARIAC BULLETIN for complete data

GENERAL RADIO Company
275 Massachusetts Ave.
Cambridge 39, Mass.
90 West St. NEW YORK 6 520 South Michigan Ave. CHICAGO 5
1000 North Seward St. LOS ANGELES 38



When inquiring check CP 6746 on handy form, pgs. 2-3

photograph it!

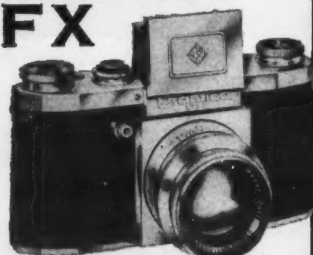
A photo record is quicker, more accurate; and it may prove to be priceless.

THE ADVANCED single-lens reflex design of the 35-mm. PRAKTICA FX makes it easier for you to get expert photomicrographs, oscillographs, extreme close-ups, copy work, etc., in color or black and white. Record lab and field observations. Take instrument readings. Quality control. Make graphic photos available to production, sales and ad departments, train personnel, etc. An excellent camera for the home photographer, too. From \$99.50 to \$199.50 (Tax incl.) The Praktica Co., Inc., 48 W. 29 St., N. Y. 1



**39 tested ideas
Free for you!**

**PRAKTICA
FX**



35-MM. SINGLE-LENS REFLEX CAMERA

When inquiring check CP 6747 on handy form, pgs. 2-3

The Praktica Co., Inc. Dept. A112
48 West 29th Street, N. Y. 1, N. Y.
Please send me a copy of "PHOTOGRAPHY IN SCIENCE AND INDUSTRY."

Name.....
Position.....
Company.....
Address.....
City.....Zone...State.....

LABORATORY

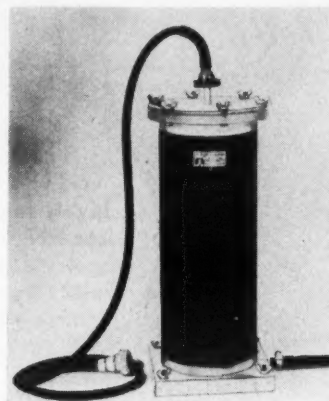
**Water conditioning unit
does big job with
small package...**

has capacity up to 12,000 gal

Uses: Conditioning unit may be used for any ion exchange process or as a demineralizer. Solid and gaseous media are removed during cycle.

Features: Unit may be used individually or in multiples for simple or complex processes. Regeneration may be done by user. Provides capacities up to 12,000 gal when used in series.

Description: Enley "PUP" Reactor is constructed of high temperature Lucite resin. Unit has excellent chemical resistance and



Basic conditioning unit with regenerating tube attached

clarity. Two sizes and three heights are available to provide different capacities. High purity and high capacity resins fulfill every ion exchange need for use with units. Provided with glass wool at top and bottom, units have outlets of 1/2" or more tubing. Units can be secured on floor, table, or other surface.

Enley "PUP" Regenerator Tube facilitates easy, fast regeneration of unit by user. Tube attaches to conditioning unit in simple manner and allows for backwashing of resins. Top lid of unit is removable so that tube may be fastened on for immediate regeneration when necessary.

("PUP" Reactor and "PUP" Regenerator Tube are products of Enley Products, Inc., Dept. CP, 254 Pearl St., New York 38, N. Y. . . or for more information check CP 6748 on handy form, pages 2 and 3.)

FLUOROFLEX-T* rod and sheet give you

TEFLON®

at its best



FLUOROFLEX-T is "Teflon" processed under rigid control in new equipment expressly designed to bring out utmost inertness and stability in this material. Uniform in density and dimension, Fluoroflex-T sheets are exceptionally flat—easier to work with. Rods are free from internal strains, cracks, or porosity—easier to machine. Teflon withstands -90°F to +500°F. It is "self-lubricating." It's completely unaffected by virtually all chemicals. Which makes Fluoroflex-T the ideal packing, gasket or seal for processing equipment. Rods from 1/4" to 2" diameter; sheets 21" x 21" in 1/16" to 1 1/2" thickness. Ask us to quote on your needs. RESISTOFLEX CORPORATION, Belleville 9, N. J.

*Reg. trade name of Resistoflex Corp. for products manufactured from Teflon resin.

®DuPont trademark for its Tetrafluoroethylene resin.

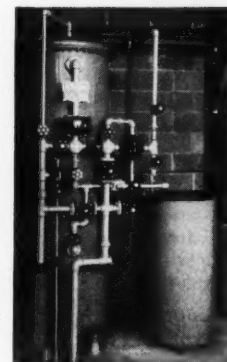
RESISTOFLEX

*For out of the ordinary
engineering with synthetics*

When inquiring check CP 6749 on handy form, pgs. 2-3

ULTRA-DEIONIZER

**Produces Highest Quality
Mineral-Free Water**



This remarkable single tank, mixed-bed ion exchange unit produces deionized water for less than 25 cents per 1000 gallons (based on 10 grain water).

FEATURES

- Replaces Distillation or Evaporation
 - at 1% to 10% of the cost
 - Removes All Ionizable Impurities
 - including CO₂ and silica
 - Up to 44% Greater Capacity
 - double-check design
 - Requires Minimum Space
 - lower investment cost
- Write for Bulletin 512

ZEOLITE WATER SOFTENERS

New Bulletin 611 describes "Double-Check" type water softener that delivers up to 44% more soft water. Also covers complete line of equipment and treatment for any water conditioning need. Write for your copy.

ELGIN SOFTENER CORPORATION
180 North Grove Avenue, Elgin, Illinois
WATER CONDITIONING SINCE 1908

When inquiring check CP 6750 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Designed for film techniques, diffraction unit has room for three cameras . . .

operates at 50,000 volts (peak) with current held to plus or minus 0.02% of 50 milliamperes

Uses: Compact X-ray diffraction unit designed to employ film technique only.

Features: Has sufficient room so that three cameras can be used in crystal studies.

Description: Film technique unit takes up only about half the floor space required by general-purpose unit. High voltage transformer provides full-wave rectified, end-grounded voltage up to 50 kv at 50 ma continuously. Tube current stabilizer



Cameras are mounted on top

is an instantaneous electronic control which holds tube current constant within plus or minus 0.02% or better. Housing provides a mounting for electronic line-voltage stabilizer, if desired.

Height of target in usual X-ray tube is nominally 10.5 inches, but is fully adjustable from 8 to 13 inches above the top. Camera track can be adjusted from 0 to 10 degrees below horizontal for optimum target take-off angle, and from 0 to 45 degrees above horizontal for use of crystal monochromator.

Unit has a self-contained water cooler which eliminates plumbing and condensation, hard-water deposits, and various other problems of tap-water cooling.

(Designated XRD-4, unit is a product of General Electric Company, Department CP, 4855 Electric Avenue, Milwaukee 14, Wisconsin . . . or for more information check CP 6751 on handy form, pages 2 and 3.)

Consider your present and possible uses for OXYGEN and NITROGEN

you may be able to

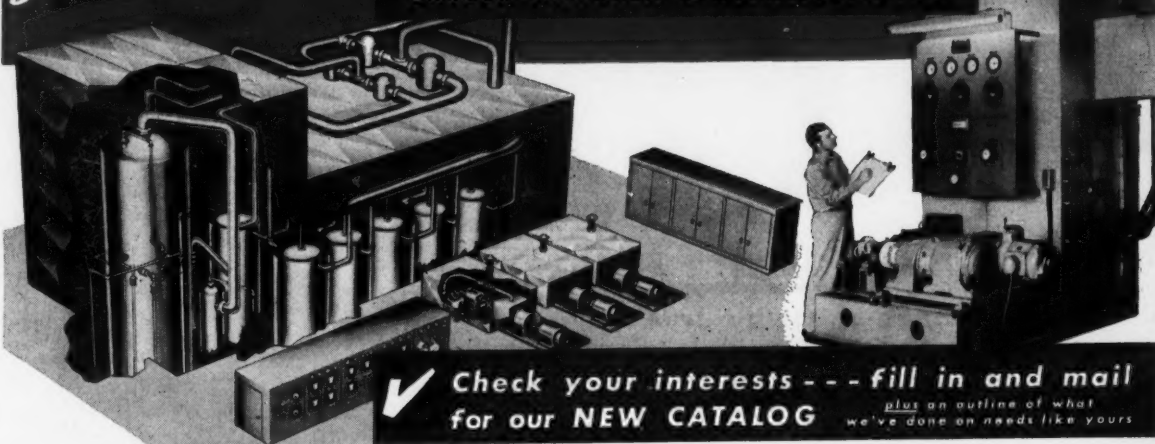
- Save thousands of dollars per year
- Convert waste products into profits
- Increase production, broaden your business

by making your own--with

Air Products

High-Purity
or Tonnage

OXYGEN-NITROGEN GENERATORS



✓ Check your interests -- fill in and mail
for our NEW CATALOG plus an outline of what we've done on needs like yours

Steel Making, Processing

OXYGEN USES:

- ☐ Furnace enrichment
- ☐ Scarfing
- ☐ Cutting
- ☐ Welding

NITROGEN USES:

- ☐ Annealing
- ☐ Heat treating
- ☐ Inert atmospheres
- ☐ Furnace brazing

Others

Chemical Manufacturing, Processing

OXYGEN USES:

Production of Synthesis Gas for

- ☐ Ammonia
- ☐ Acetylene
- ☐ Methanol
- ☐ Other Chemicals (specify below)

NITROGEN USES:

- ☐ Ammonia synthesis
- ☐ Atmosphere control
- ☐ Nitrogen for use in drugs
- ☐ Liquid nitrogen scrubbing of synthesis gas



Specialists in Equipment for
All Low-Temperature Processes

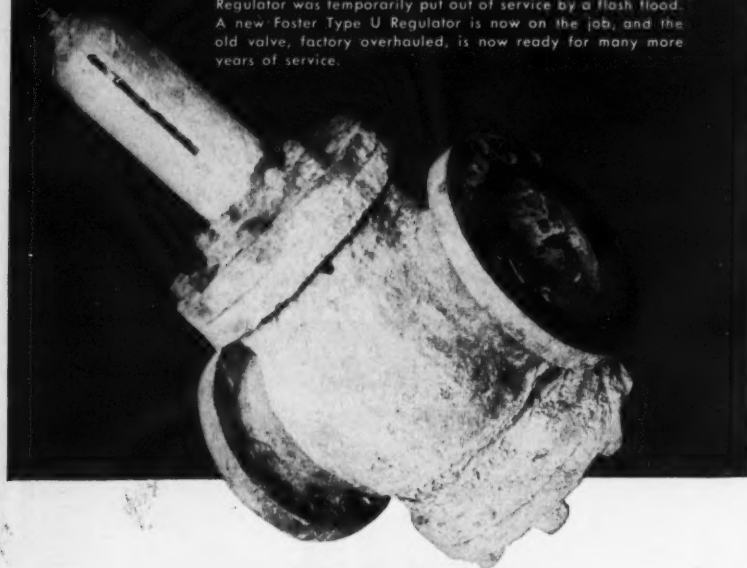
Air Products
Dept. K, Box 538

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____

When inquiring check CP 6752 on handy form, pgs. 2-3

FOSTER MEANS...

It took a flood to knock it out! After 29 years of continuous trouble-free service in the water supply system of a northern New Jersey Township, this Foster 6" Type U Pressure Regulator was temporarily put out of service by a flash flood. A new Foster Type U Regulator is now on the job, and the old valve, factory overhauled, is now ready for many more years of service.



... and **QUALITY** means
Dependable, Trouble-free Service

To give dependable regulation, a valve must be able to meet service requirements without compromise.

There is a specific type of Foster automatic valve for every service need. Each valve is engineered and built to do its job with a comfortable margin to spare, which means low maintenance.

This is the reason that Foster valves, over the years, have established a record for dependable performance second to none.

The next time you need a pressure regulator, it will pay you to tell the Foster Representative your requirements.

FOSTER ENGINEERING

SEE US AT THE POWER SHOW • NEW YORK • DECEMBER 1-6 • BOOTHS 38-39

When inquiring check CP 6753 on handy form, pgs. 2-3

LABORATORY

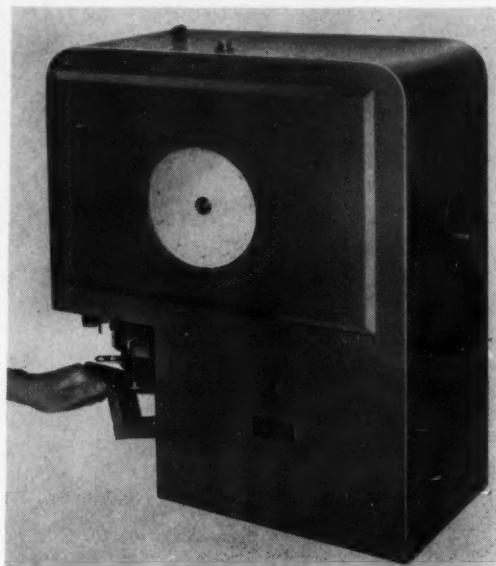
Moisture tests get faster and faster — 30 seconds to check sand . . .

with electronic & hot air oven no weighing is involved to produce a direct reading

Uses: Designed for testing moisture in foundry sand. Probably this instrument can be used satisfactorily with many other materials of a similar nature.

Features: Test time of only thirty seconds appears to leave an ample margin — actual drying operation is reported to be completed in ten to fifteen seconds. Instrument produces a direct reading of per cent moisture.

Description: Sample size can range from 10 to 35 grams; is not weighed. Once sample is placed in the instrument, a component electronic balance



Electronic balance does the weighing

takes over, weighs it, and drying begins. Thermostatically controlled hot air dries sample in 10 to 15 seconds and actual moisture can be read directly from large dial.

(Known as the No. 279 Quickmoisture, this tester has been developed by Harry W. Dietert Company, Dept. CP, 9330 Roselawn Ave., Detroit 4, Mich. . . . or for more information check CP 6754 on handy form, pages 2 and 3.)

**Handy warmer plate offers
thermostatic control —
sensitivity $\pm 1^\circ\text{C}$. . .**

may be used as utility heating plate for any surface temperature from room to 100°C

Uses: For keeping solutions at desired temperatures, for evaporations below boiling points, and as utility heating plate.

Features: Large working surface is $24\frac{1}{2}$ inches long and $6\frac{1}{2}$ inches wide. Unit is thermostatically

In **1** Plant
FEON
FABRICS Save
ON ALL **4**



FILTER PRESS

FEON Dynel lasts 9 times longer than cotton in this pigment plant. Saves over \$2500 a year.



STRING FILTER

FEON Nylon lasts a year under severe chemical conditions, compared to 6 weeks for cotton. Saves \$500 a year.



SCRAPER FILTER

Under less severe chemical conditions, FEON Nylon replaces heavy cotton, saves \$150 a year.



DUST COLLECTOR

Hot copper sulfate dust clogged wool bags. FEON Orlon costs less, eliminates clogging, lasts longer.



Fabric selector chart, technical data, case histories. Send for it today.

FILTRATION FABRICS DIVISION

FILTRATION ENGINEERS, INC.

155 Oraton St., Newark 4, N. J.

When inquiring check CP 6755 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LABORATORY

Is it worth \$101.55
to keep
granular materials

Moving
through your hoppers?



That's all it costs to make a complete installation of a Cleveland Air Vibrator on an average steel bin of 10-ton capacity in a chemical processing plant!



This cost will come back to you **FAST** in terms of uninterrupted flow of materials, longer life of your bins and hoppers and generally better production.

Arching, bridging, sticking of dry materials in YOUR plant just won't exist, if you use Cleveland Air Vibrators.

There's a type and size to fit your problem ... Standard metallic impact and air-cushioned quiet types.

This product is doing a job in chemical plants everywhere — on bins, hoppers, chutes, screens, storage tanks and other applications.

Catalog No. 105 gives further details.

BIN Stuck Lately?



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 6756 on handy form, pgs. 2-3

controlled and has sensitivity of plus or minus 1°C. Built-in thermometer continuously indicates operating temperatures. Mat type heater covers entire heating surface and gives constant, even heat. Metal cover completely covers unit and protects it when not in use.

Description: Utility warmer plate is finished in grey hammerloid, baked on. Designed for use in clinical, biological, bacteriological, chemical, and industrial labs. Model for use on 115-volts, 50-60 cycles, draws 300 watts. Temperature control knob, at front center of unit, gives instant control for desired temperatures.

(Utility warmer plate is product of Labline, Inc., Dept. CP, 217-221 N. Desplaines St., Chicago 6, Ill. ... or for more information check CP 6757 on handy form, pages 2 and 3.)

Brass, copper, nickel, chrome, lead are combined in construction of lab sink . . .

Chemstone basin 9" deep has leak-proof tongue and groove, is cement bonded.

Uses: For general duty required of laboratory sinks.

Features: Unit is of steel for prolonged life, double faucet is of solid brass, triple plated with copper, nickel, and chrome. Sink basin (9" deep) features leak-proof tongue and groove and cement bond construction.

Description: Standard small sink unit has trap, overflow, and outlet plug of tellurium lead. Basin is made of 1 1/4" Chemstone with bottom grooved to receive sides, is 16" long, 16" wide. This sink is one of the units in manufacturer's line of matched, metal sectional laboratory furniture. Also in the same design are a medium and large sink unit measuring 35 x 20 x 16" and 47 x 24 x 16", respectively. These, too, are 9" deep.

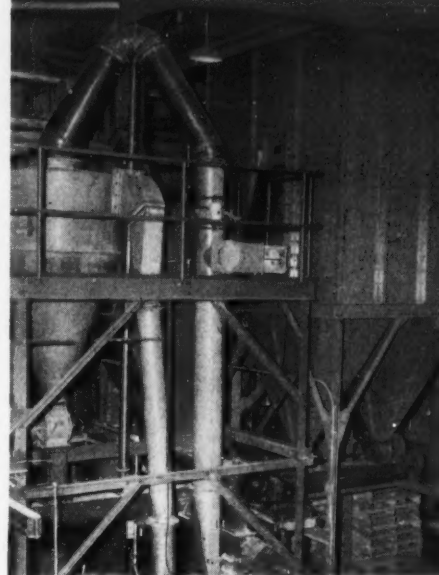
(Product of Emil Greiner Company, Dept. CP, 20-26 N. Moore St., New York, N. Y. . . . or for more information check CP 6758 on handy form, pages 2 and 3.)

Describes optical instruments for quality control

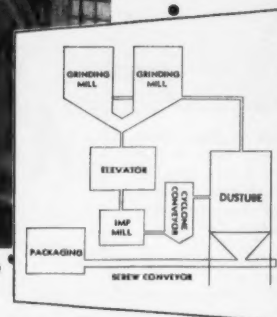
Functions and applications of seven types of optical instruments that aid production and quality control in industry are discussed in eight-page bulletin. Featuring photos, drawings, and technical data, the booklet deals with the use of contour-measuring projectors, stereomicroscopes, toolmaker's microscopes, thickness gages, and other optical instruments that may be used as separate instruments or built into present equipment for rapid inspection and measurement of many items.

Bul D-22, 20.1, is issued by Bausch & Lomb Optical Co., Dept. CP, 650 St. Paul St., Rochester 2, N. Y. When inquiring specify CP 6759 on handy form, pages 2 and 3.

ANOTHER DUST PROBLEM SOLVED
by **DUSTUBE** collectors



**THE
HIGHER
EFFICIENCY
OF DUSTUBE
COLLECTORS
PAYS
OFF**



for **WILLARD**

STORAGE BATTERY CO. of CANADA LTD.

The manufacture of lead oxide for storage battery plates at the Willard Storage Battery Company of Canada, Limited, requires extensive dust control equipment. Recent process modifications, together with an expansion program, made it necessary for Willard to replace older collectors with a Dustube Collector.

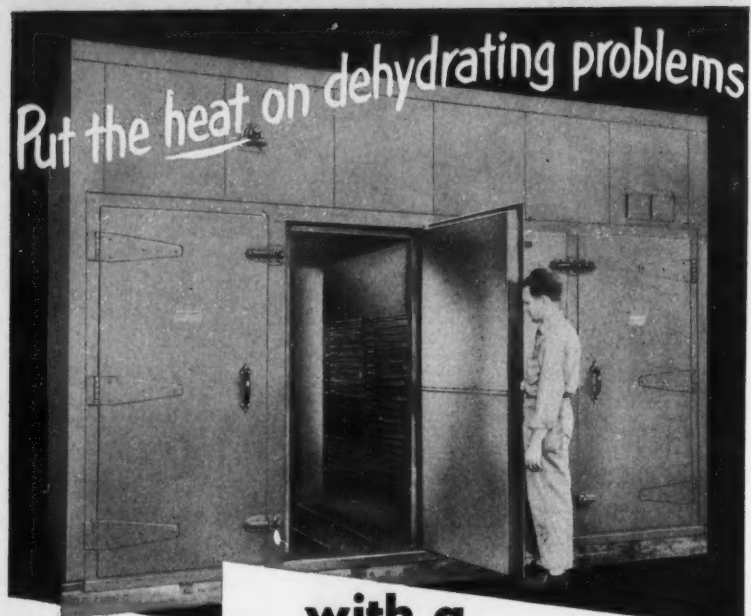
The Dustube Collector was selected because of its very high efficiency. Even very fine lead oxide dust is collected with virtually 100% efficiency. Collected material is automatically discharged into a screw conveyor and delivered to the packaging station. The lead oxide is recovered in its dry natural state so it can be used without further processing, filtering or drying.

This is just one example from hundreds showing that Dustube Collectors remove dust more thoroughly at lower cost. It will do the same for you. *Write for Catalog 372 today!*

American
WHEELABRATOR & EQUIPMENT CORP.
478 S. Byrkit St. Mishawaka, Indiana

dustube
COLLECTORS

When inquiring check CP 6760 on handy form, pgs. 2-3



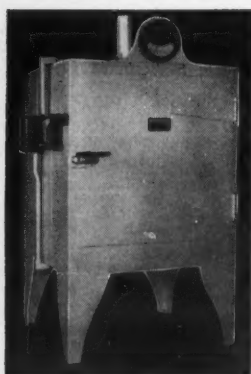
A Kirk & Blum Oven removes 900 lbs. of water from 1700 lb. chemical load at Tennessee Eastman Corp., Kingsport, Tennessee.

with a **KIRK AND BLUM** oven

Specially designed to solve difficult problems . . . KIRK and BLUM Ovens meet any dehydrating needs. The large oven illustrated was built to insure complete removal of moisture as it is taken up by warm air . . . eliminating subsequent deposit on other trays. Four separate compartments each individually controlled for temperature and air circulation in this steam heated oven allows removal of finished loads at any time.

This KIRK and BLUM Oven was shipped completely assembled, thoroughly tested and ready to operate.

It is another example of the diversity of drying problems skillfully solved by KIRK and BLUM engineers. If you have a problem involving ovens . . . feel free to consult with a KIRK and BLUM engineer . . . there is no obligation.



Write for booklet . . . "Industrial Ovens". The Kirk & Blum Mfg. Co., 3133 Forrer St., Cincinnati 9, Ohio.

LABORATORY OVEN . . . electrically heated . . . automatically controlled and timed . . . suitable for test and research . . . or for small production.

KIRK AND BLUM
LABORATORY AND
INDUSTRIAL OVENS

When inquiring check CP 6761 on handy form, pgs. 2-3

LABORATORY

**RF DC power unit
offers safety
features . . .**

provides output from below 1 kv to 30 kv at 5 ma

Uses: Designed to provide unit for use beyond current limitations of RF high voltage power supplies. May be used in precipitation operations, electrostatic spraying, and insulation testing.

Features: Incorporation of several safety devices protect operator during use of unit: 1) adjustable load cut-out; 2) double push-buttons requiring both hands to turn-on high voltage; 3) safety interlock on rear door; and 4) latching circuit to keep high voltage off after line voltage failure.

Description: The Neutronic high voltage power supply, Model No. 33HRR, provides an output from below 1 kv to 30 kv at 5 ma in three ranges. Up to 400 w of regulated AC may be drawn simultaneously from outlets on front panel. The regulation is 0.1% at all voltages. Line voltage stabilization is 0.1% at voltages from 105 to 130 AC. Ripple voltage is less than 0.05% of DC output voltage.

Featuring reversible output polarity (either positive or negative), unit has three output ranges — 0-5, 0-15, and 0-30 kv. Current meter has three ranges — 0-0.5, 0-1, and 0-5 ma.

(Units are products of Neutronic Assoc., Dept. CP, 83-56 Victor Avenue, Elmhurst 73, New York . . . or for more information check CP 6762 on handy form, pages 2 and 3.)

Six models offered in transformers

Current transformers, designed for use with ammeters, relays, or other devices where phase angle is not important, are available in six models with ratios ranging from 1000/5 to 2500/5. Units have a capacity of 2.5 volt ampere.

Complete specifications for all units are given in two-page bulletin. Bul 3AA is issued by Associated Research, Inc., Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. When inquiring specify CP 6763 on handy form, pages 2 and 3.

**Preventive painting
cuts costs—**

CORROSION, too

Application of Ucilon® Protective Coatings to plant structures and equipment is the secret of effective preventive maintenance in many plants. Systems of Ucilon Coatings do the job especially well for two reasons:

First, the Systems don't overlook proper surface preparation and priming as required. This assures adhesion of top coats and resistance to undercutting. Second, Ucilon Coatings strongly resist acids, alkalis, alcohols, oils, petroleum products, moisture, salt solutions and many other chemicals and corrosives. Coatings include vinyl, phenolic, chlorinated rubber and fish oil types.

As a result, Systems of Ucilon Coatings have been successful not only in preventing corrosion but also in lengthening intervals between paintings. Concise data given in Bulletin MC-6—write for it.

*Trade Mark

UCILON Protective Coatings

Trade Mark

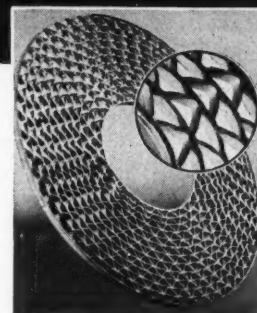
One Group of the Many **UNICHROME** COATINGS FOR METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N. Y.
Detroit 20, Mich.—Waterbury 20, Conn.—Chicago 4, Ill.—Los Angeles 13, Cal.
In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 6764 on handy form, pgs. 2-3

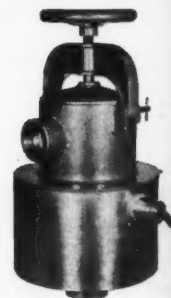
*Does iron contamination
affect your product?*

STOP IT
with the
FERROFILTER



A FERROFILTER GRID
Magnified inset shows iron particles collected on grid edges.

You can prevent microscopic ferrous particles from contaminating your product. Shown is the Pipeline model. Others available are Gravity Feed and Underfeed types. Also Dry FERROFILTERS for powdered and granulated materials. For more information—



Send for Bulletin 46

Try FRANTZ FERROFILTERS on our Rental Plan. Write for Details.

S. G. Frantz Co., Inc.

P. O. BOX 1138

TRENTON 6, N. J.

When inquiring check CP 6765 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LABORATORY

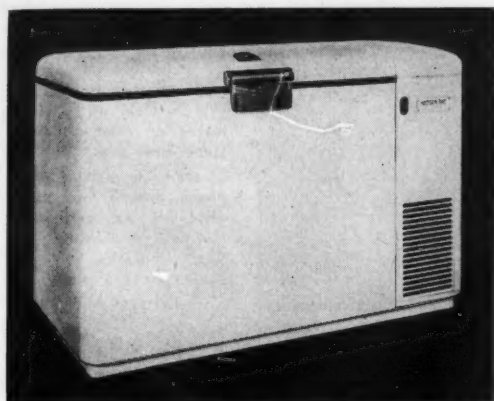
Low temperature cabinet
has range from -30° to
plus 30°F ...

designed for processing and testing applications
requiring large volume of low temp space

Uses: For use in chemical and materials processing,
aluminum cooling, and general lab work.

Features: Provides controlled temperatures
between plus 30 and minus 30°F .

Description: Hudson Bay model 1130H horizontal
utility cabinet is an 11 cu ft low temperature cabinet
suitable for processing applications requiring a
large volume of low temperature storage space.



11 cu ft low temperature cabinet provides controlled
temperatures and large volume of storage space

Unit consists of an insulated cold chamber with
counter-balanced "finger-tip" lid and adjoining machine
compartment. Machine compartment, designed
for complete accessibility, houses refrigeration and
control system. Unit is furnished with lock-type lid
as well as an interior light. Temperature control is
provided by adjustable, precision-type thermostat.
Refrigeration is provided by $\frac{1}{4}$ -hp hermetically-
sealed, air-cooled condensing unit operating on 110v,
60 cycle current.

(Cabinet is a product of Refrigeration Systems, Inc.,
Dept. CP, 646 W. Washington Blvd., Chicago 6,
Ill. . . or for more information check CP 6766 on
handy form, pages 2 and 3.)

Catalogs cover apparatus glassware, supplies

Two recent catalogs contain comprehensive listing
of maker's products and stocks in scientific instruments,
apparatus, general laboratory glassware,
supplies, and manufactured glassware.

General catalog, consisting of 1000 pages, lists
instruments, apparatus, general glassware, and
supplies. Second catalog of 420 pages covers
entire line of manufactured glassware, both stand-
ard and special.

Catalogs issued by Scientific Glass Apparatus Co.,
Inc., Dept. CP, 100 Lakewood Terrace, Bloom-
field, N. J. When inquiring specify CP 6767 on
handy form, pages 2 and 3.

GET A CLOSER LOOK at

NEW

TTT DIAGRAMS

for B&W Croloy 7 and B&W Croloy 9
High-Temperature Tubing



Finding new facts about the be-
havior of alloy, stainless, and carbon
steel tubing to help users with application
and installation problems is a regular major
function of the B&W Technical Service. For
example:

Isothermal transformation data recently
were made available for the first time on
B&W Croloy 7 and B&W Croloy 9 tubing.
Extensive research and tests on these two
popular intermediate alloys for high-tem-
perature services provided sufficient data to
construct the time - temperature - transfor-
mation diagrams reproduced on the opposite
page. They furnish helpful information re-
lating to the heat treatment, general fabricat-
ing and welding, and particularly the hard-
enability of these tubing steels.

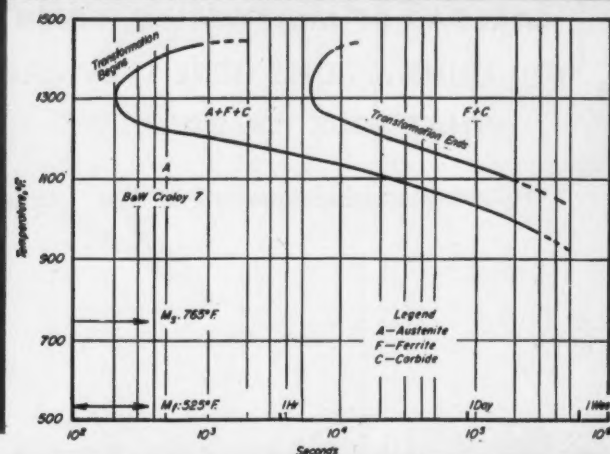
A technical report TR 520 covering the
TTT tests and findings is yours for the asking.

CONDENSED DATA

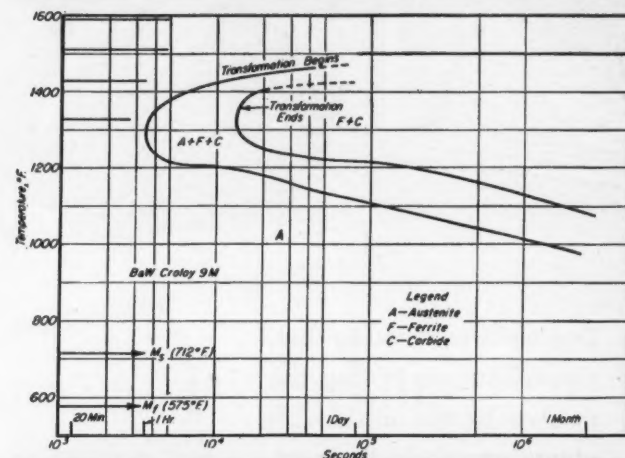
B&W Croloy 7 and B&W Croloy 9 Tubing

B&W CROLOY 7 (7% Cr., 0.50% Mo.)—For
operating conditions where excellent cor-
rosion resistance to hot oils is primary con-
sideration. Has good oxidation resistance
and high temperature strength to 1250 F.

B&W CROLOY 9 (9% Cr., 1% Mo.)—Offers
very good corrosion and oxidation resistance
with good high-temperature strength to
1300 F. It is particularly suitable in refinery
applications where sulphide corrosion is en-
countered. Good resistance to steam oxida-
tion to 1100 F. Particularly suited for hydro-
genation processes.



TTT Curve for B&W Croloy 7. Austenitized 40 min. at 1860 F.
As-quenched grain size, A.S.T.M. No. 4 to 5.



TTT Curve for B&W Croloy 9. Austenitized 40 min. at 1860 F.
As-quenched grain size, A.S.T.M. No. 4 to 5.

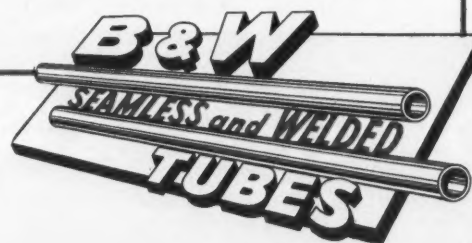
Both of these intermediate alloys have
gained wide acceptance for giving optimum
service satisfaction with economy in oil re-
fineries, and petro-chemical, chemical pro-
cessing, and hydrogenation plants. They're
worth investigating. You'll find Mr. Tubes—
your local B&W Tube Representative—a
good man to consult on any problem involv-
ing alloy, stainless or carbon steel tubing.

THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

General Offices & Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

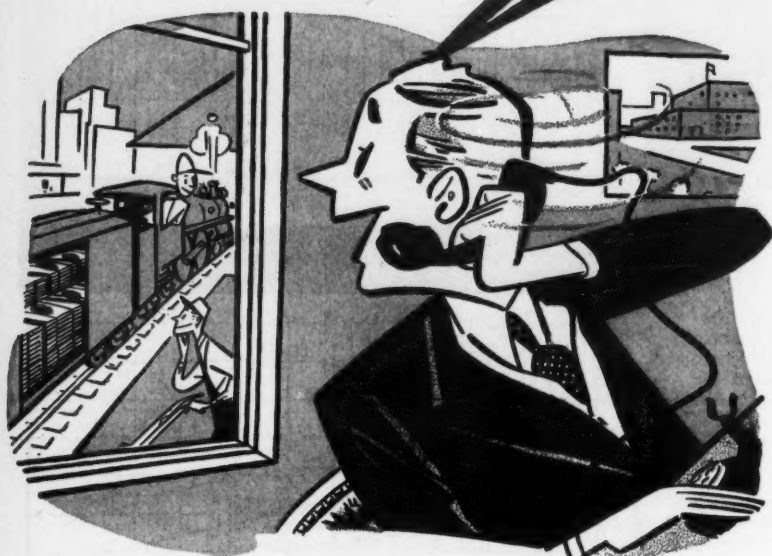
Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. •
Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich. • Houston 19,
Texas • Los Angeles 17, Cal. • New York 16, N. Y. • Philadelphia 2,
Pa. • St. Louis 1, Mo. • San Francisco 3, Cal. • Syracuse 2, N. Y. •
Toronto, Ontario • Tulsa 3, Okla.



When inquiring check CP 6768 on handy form, pgs. 2-3

TA-16985

HELLO...BEMIS? I WANT TO ORDER A
CARLOAD OF MULTIWALLS. WHEN DO
YOU THINK... OH! HERE THEY ARE!
WHAT TOOK YOU SO LONG?



Don't pin us down to that, please. But, no fooling, the twelve Bemis multiwall plants, strategically located coast to coast, mean that at least one is conveniently close to you. This time-saving means money-saving. Ask your Bemis Man for details.



Bemis



General Offices — St. Louis 2, Mo.
Offices in all Principal Cities

When inquiring check CP 6769 on handy form, pgs. 2-3

Packaging



Fig 1—Wrapping machine in operation. Roll of cellophane at lower left is cut in required sheet size and delivered to flat surface in front of operator. Cakes of moth repellent come from press at right. Operator is placing cellophane around two cakes divided by carboard while glancing at folding and sealing station. Vapor-proof package passes to conveyor at left.

Vapor-proof packages of moth repellent are speedily wrapped on versatile machine

- Unit wrapping round cakes reduces operating personnel, requires only minimum maintenance

USES: At Enoz Packaged Goods Div. of the Diversey Corp. in Chicago, two machines are used for wrapping and sealing cylindrical shaped moth repellent blocks. In other plants unit is employed for wrapping many sizes and shapes of packages of chemicals, textiles, drugs, soaps, cosmetics, and other products in a wide variety of paper and plastic materials.

Features: Vapor-proof package is formed by wrapping the moth repellent in cellophane and sealing it. It is important that the package be vapor-proof or the paradichlorobenzene would evaporate

en route to consumer. At Diversey 15 packages per minute are being wrapped on each machine with one operator per unit. Productive capacity per machine is 21 per minute. Prior to installation of mechanical equipment, hand wrapping was employed. Use of packaging units permitted a large increase in production. At present, besides one operator required for operating each unit, one additional person per unit is needed to place cellophane wrapped cakes in boxes. Production handled by two people now, formerly required six or seven.

Machine is used for wrapping several differ-

ent size packages of moth repellent. Usual package consists of two four-inch diameter six-ounce cakes. However, another package is prepared which contains three of these units or six cakes. Six-ounce cakes are used as refills of round metal closet dispensing containers or they can be obtained cellophane-wrapped in metal container. A small flat four-ounce cake is also wrapped by unit.

When wrapping machines were installed, several types of equipment were considered. It was found that few machines will satisfactorily wrap a round cake. Units are operated continuously eight hours a day, five days a week. Outside of regular lubrication, probably not over \$25 has been spent for maintenance on units in past two years, according to production manager.

Description: Corley-Miller Model MPS Wrapping Machine uses packaging material in rolls, which is more economical than individual sheets. Saving also results from use of minimum wrapper size. For packaging the paradichlorobenzene moth repellent, known as Para Pack, machine cuts cellophane required size, impregnates one edge with glue, and delivers it on a flat table-height surface in front of operator. Cakes of moth repellent are received from press in similar manner.

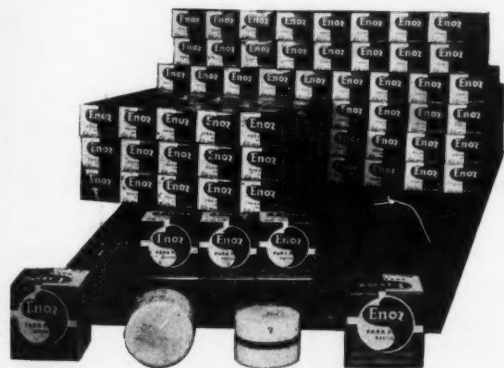


Fig 2—Side and end views of package sealed with cellophane wrapper are shown at front center. Cardboard containers of two-cake units are at front right and left. At center is long package of three two-cake units

Operator places a cardboard divider between two round cakes, rolls blocks and cardboard into cellophane sheet, sealing longitudinal seam with glue which has been applied by machine. Package is then dropped into folding station of wrapping machine. Unit folds and heat seals the package ends, then ejects the package onto a conveyor belt. Another operator places cardboard protectors around package and on top and bottom. Package is then inserted in light cardboard box, along with instructions for use.

For wrapping the package of two six-ounce round cakes of moth repellent, 35 lb rolls of Du Pont 300 MST 54 (moisture-proof, heat sealing, and transparent) cellophane are used. For long package containing three sets of two-cake units, heavier weight 450 MST 54 cellophane is employed.

Machine is capable of handling packages $2\frac{1}{2}$ to 15" long, 1 to 9" wide, and $\frac{1}{2}$ to 3" high. Special

(Continued on next page)



Gaylord Boxes Assure Faster Packing On Your Production Line

Products manufactured on precise time schedules require constant standards of accuracy . . . every step of the way.

For example—no matter how your shipping containers are sealed—stitched, stapled, strapped, taped or glued—Gaylord accurate scoring assures fast, easy handling.

Production-wise it's good business to ship your products in Gaylord Boxes.

CHEMICAL PROCESSORS: Check with the Gaylord sales office nearest you for the latest type of Chemical container developed by Gaylord's Research and Engineering Division.



Their unseen quality gives you an extra margin of safety.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • Branches: New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Indianapolis • Los Angeles • Seattle • Houston • Oakland • Minneapolis • Detroit • Columbus • Fort Worth • Tampa • Dallas • St. Louis • Cincinnati • Des Moines • Oklahoma City • Portland • Greenville • San Antonio • Memphis • Kansas City • Bogalusa • Chattanooga • Milwaukee • Weslaco • New Haven • Amarillo • Appleton • Hickory • Sumter • Greensboro • Jackson • Miami • Omaha • Mobile • Philadelphia • Little Rock • Charlotte • Cleveland

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

The light way to ship is in Continental Fibre Drums



These light-weight durable shipping containers are designed for real economy. They bring you appreciable savings on shipping charges — savings that can amount to substantial sums in the face of today's high freight rates. And they also save you worthwhile amounts on export shipments where import duties are figured on gross weight.

Continental drums are tough and sturdy. They stand up to the abuse of long freight hauls without splitting,

cracking or leaking. This means you can give expensive or dangerous materials adequate shipping protection at minimum shipping cost. Closures seal securely, yet go on and off easily.

These drums can be printed or paint sprayed to become colorful, effective "traveling salesmen!" Continental fibre drums are available in a full line of sizes, from 12 gallons to 75. Call or write your nearest office for complete details.

CONTINENTAL © CAN COMPANY
Fibre Drum Division
Van Wert, Ohio

NEW YORK	•	PHILADELPHIA	•	PITTSBURGH	•	TONAWANDA	•	CLEVELAND
CHICAGO	•	SAN FRANCISCO	•	ST. LOUIS	•	LOS ANGELES	•	EAU CLAIRE

When inquiring check CP 6770 on handy form, pgs. 2-3

PACKAGING

(Continued from preceding page)

adjustment ranges for larger or smaller packages are also available. For oddly shaped packages, underlap or bottom fold attachment can be obtained. For packages with low melting point, Pull-Thru device can be supplied. Banding attachment or automatic labeller and label imprinter are available for identifying package. Electric eye can be added to unit to automatically regulate cutting of printed wrappers from rolls.

Full load power consumption averages 1000 watts. Machine is equipped with 1/4 hp single phase motor. Heat in sealing plates is thermostatically controlled. In place of heat sealing, unit can be furnished with gluing mechanism to seal wrappers with cold glue. Floor space required is area 4 x 8'. When not in use, extension tables can be lowered, reducing floor space needed to 4 by 3'.

(Wrapping machine is product of Miller Wrapping & Sealing Machine Co., Dept. CP, 18 S. Clinton St., Chicago 6, Ill. . . . or for more information check CP 6771 on handy form, pages 2 and 3.)

Polyethylene bag has seal that's actually stronger than sidewalls . . .

welded seal makes package air- and water-tight

Uses: As liners for paper and other type bags, straight cardboard or corrugated cartons of all sizes, and for fiber, metal, and wooden drums or barrels. Used individually, they provide functional container for variety of precision metal



Welded seal of polyethylene bag is shown in inset

parts. Fluids, including most acids and alkalis, easily contaminated or corroded items, and products which must be kept in either moist or dry state, can be packaged safely.

Features: Strength of welded seal exceeds sidewall strength; container is air- and water-tight.

Description: Bags and liners have properties of polyethylene, i.e., chemically inert, odorless, tasteless, will not shatter, crack, or split.

(Product of Plastic Packaging Company, Dept. CP, 730 N. Franklin St., Chicago 10, Ill. . . . or for more information check CP 6772 on handy form, pages 2 and 3.)

PACKAGING

Machine "pours" seal onto part to form rubber gasket . . .

designed to replace pre-cut
cork or rubber gaskets

Uses: For components or lined
equipment requiring gaskets. Sub-
stance can be formulated to pro-
vide effective seal to moisture,
solvents, heat, pressure, vacuum,
weather, and vibration.

Features: Liquid material is
applied to part and then baked to
form solid rubber gasket, which
will not fall off part. In addition
to better sealing qualities, gasket is
applied faster since it does not
have to be crimped, stamped, or
glued to hold it in place.

Description: Flowed-in gasket
is liquid, synthetic rubber or resin
compound, which is intended to
replace pre-cut cork or rubber
gaskets. Compounds can be for-
mulated to produce either cellular
or solid gaskets as well as gaskets
which swell to insure hermetic
sealing of enclosed seam.

Gaskets may be applied by auto-
matic or semi-automatic lining
equipment. Former receives parts
from belt or gravity feed and
passes them to the chuck. Part is
spun by chuck under adjustable
nozzle, which squirts measured
amount of compound into groove
or channel on part. Part is then
carried by conveyor to oven and
baked to form rubber gasket.

Automatic lining machine applies
gaskets at speeds up to 300 parts/
min, depending upon size of part.
It can handle parts from $\frac{3}{4}$ to
12" in diameter and requires no
operator if belt-fed.

Semi-automatic machine requires
one operator and has capacity up
to 50 parts/min, with same limita-
tion by part size. It will line
parts measuring from $\frac{1}{2}$ to 23"
diameter. In both automatic and
semi-automatic machines, baking
time depends upon compound used
and size of gasket.

(Product of Dewey and Almy
Chemical Company, Dept. CP, 62
Whittemore Ave., Cambridge 40,
Mass. . . . or for more informa-
tion check CP 6773 on handy form,
pages 2 and 3.)

For more information on prod-
uct at right, specify CP 6774
... see information request
blank between pages 2-3. ➡

The Longest Night of the Year

Of all the days, of all the nights,
That creep with laggard tread,
No day seems so far distant
As the one that's just ahead.

They hear the distant sleigh bells
That tinkle in the night.
They hear the call that haunts us all,
Of trains on wings of flight.

They hear the watchman's muffled tread,
They see his searching light.
They resolutely close their eyes
To speed the endless night.

They hear the quarter hours chime,
They count on fingers then
And find to their near-anguish
It's but slightly after ten.

So, when at dawn they wake you
With impatience and delight—
Remember then, remember well,
They've been awake all night!

VERSE BY ROBERT FRANZ
PRETTY PRINT PATTERN IN
SLEEPERS BY CHASE BAG CO.

**WON'T
SMUDGE
•
RESISTS:
DIRT
GREASE
WATER
ACIDS**

**LABELON
PLASTIC**

Write on it
TAPE

**STICKS
WITHOUT
MOISTENING**

Nothing else like LABELON—the amazing "Write on it" plastic tape! Use it to mark test tubes, glass vessels, test batches, specimens . . . to identify circuits, panel boards, fuel lines, instruments . . . to label stockroom shelves, bins, hard-to-mark objects. Ideal, too, for office files, folders, stored records, etc.

LABELON TAPE sticks without moistening to any smooth, clean surface — yet can be quickly removed. Resists heat up to 160°. Just write on it with pencil or stylus—message won't smudge. Choice of widths and colors. Handy dispenser with cutter bar.

See your nearest dealer or write for sample and prices.

LABELON TAPE CO., INC.
450 Atlantic Ave., Rochester 9, N. Y.

**FOR LABORATORY
STOCK ROOM,
OFFICE, ETC.**

Write to Dept. CP

When inquiring check CP 6775 on handy form, pgs. 2-3



Left—
Union Special
Style 20100 H
Bag Closing
Machine

*Here's how
to close*
**MULTIWALL
PAPER
BAGS**

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements. **ASK FOR RECOMMENDATIONS.**

SEND FOR THIS BULLETIN!

Get your copy of this 16 page illustrated bulletin containing helpful data and charts on the complete Union Special line of bag closing machines. **UNION SPECIAL MACHINE CO.,** 442 North Franklin Street, Chicago 10, Illinois

UNION SPECIAL

When inquiring check CP 6776 on handy form, pgs. 2-3

PACKAGING

Automatically fills 1000 drums during 8 hour shift . . .

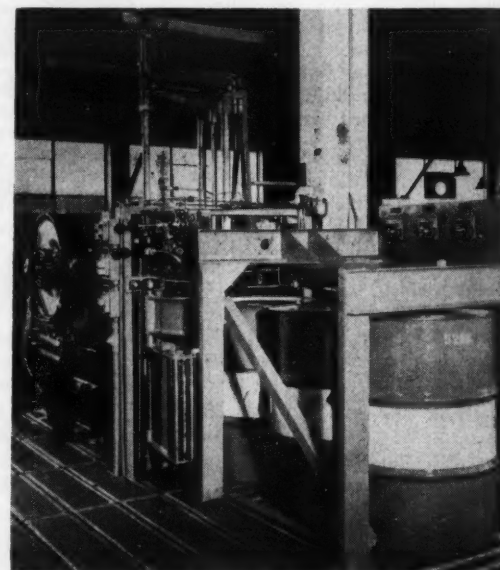
operation minimizes losses due to overfilling

Uses: To automatically fill 53 to 55 gallon drums, with oil and other liquids.

Features: Installation in major oil refinery reports substantial savings in filling costs and in material losses due to overfilling. Unit was also practical for relatively short runs where succeeding products were compatible.

Description: In operation empty drums are fed to unit by conveyor. The filler admits one drum at a time, locates the bung, and positions drum. Filling lance descends through open bung, automatically opening filling valve at bottom of stroke.

Drum is filled from "the bottom up," with lance top submerged to minimize foaming and static spark. A dial scale automatically stops feed when desired limit is reached. Lance withdraws and drip pan swings under tip. In this manner, drum heads are kept clean and dripped liquid is returned to filling line.



Once started, automatic drum filler functions without operator's attention until it's manually stopped

Automatic drum filler is capable of filling 1000 drums in eight hours with single operator. Machine compensates for wide variations in drum heights, diameter, and location of bung. Dial scale on unit is pre-set to desired filling weight and automatically adjusts for tare weight of drum.

Hydraulic controls operate entire unit; and once started, drum filler functions without operator's attention until manually stopped. Interlocking controls will stop operation if empty drums are not received at unit or filled drums not moved off delivery conveyor.

(Product of The Rucker Company, Dept. CP, 4228 Hollis St., Oakland 8, Calif. . . . or for more information check CP 6778 on handy form, pages 2 and 3.)

CUT CLOSING COSTS

with the Economical and Efficient . . .

• Requires no installation, supports or plant space . . . merely plug into any electrical outlet

• Entirely portable . . . weighs only 10½ pounds

• Handles all types of textile bags and most paper bags

• Economical to use . . . economical to buy!

• Unconditionally guaranteed

FISCHBEIN
Portable
BAG CLOSER

Lightweight, practical, handy, easy to operate! Efficiency and reliability proved by over 4000 users in every part of the world under varying operating conditions. For details on how YOU can cut YOUR Bag Closing costs with the FISCHBEIN Portable BAG CLOSER . . . write:



DAVE FISCHBEIN CO.
Industrial Sewing Machinery

**DEPT. 9B 38 GLENWOOD AVE.
MINNEAPOLIS 3, MINN.**

When inquiring check CP 6777 on handy form, pgs. 2-3

PACKAGING

Printing method stops loss of moisture in cellophane . . .

insures optimum performance
in heat sealing

Normally, high speed printing and attendant drying of inks results in loss of moisture in cellophane film making it brittle and susceptible to breakage. Normalizing is method of controlling moisture content of cellophane while it is being printed as means to eliminate these deficiencies.

Process eliminates dehydration during printing and film retains original life and pliability at levels recommended by cellophane manufacturers. It is also reported by the manufacturer that the film will retain its flexibility, packaging strength, appearance, and optimum performance in heat sealing.

Normalized film is intended to serve: 1) persons in extremely dry climates, 2) those whose products are sensitive to odors from printing inks, 3) those who use DuPont-Olin LST and LSAT film and Sylvania 300 DS and 300 DSB. The film can be printed in either the rotogravure or the Lithopaque aniline method.

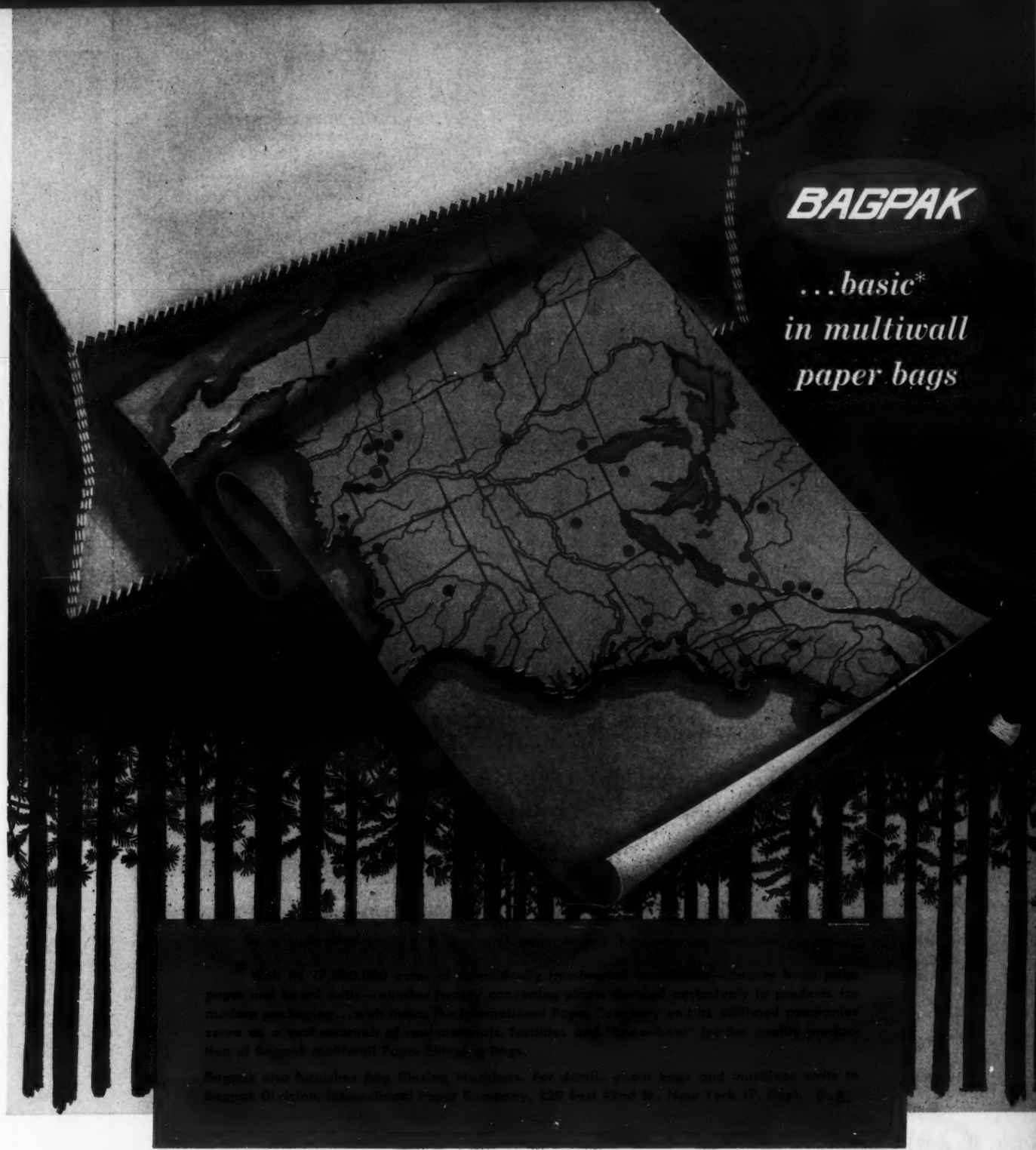
(Product of The Dobeckmun Company, Dept. CP, Cleveland, Ohio . . . or for more information check CP 6779 on handy form, pages 2 and 3.)

Suggests uses for plastic bottles

Squeezable plastic bottles as described in 8-page bulletin are available in numerous designs and colors. Bottles are unbreakable, squeezable, colorful, lightweight, and inert to chemicals. Photographs of commercial uses illustrate many applications. Closures and accessories are pictured and described.

"Plaxpak Polyethylene Bottles" is issued by Plax Corp., Dept. CP, West Hartford, Conn. When inquiring specify CP 6780 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6781 . . . see information request blank between pages 2-3.



BAGPAK

...basic*
in multiwall
paper bags

With its 17,000,000 acres of forest, fully equipped mills, and a long history of paper and board mills—making heavily converting plants devoted exclusively to products for modern packaging... with these, the International Paper Company and its affiliated companies serve up a vast assortment of raw materials, facilities and "know-how" for the quality production of Bagpak Multiwall Paper Shipping Bags.

Bagpak also manufactures Bag Closing Machines. For details, when bags and machines write to Bagpak Division, International Paper Company, 220 East 42nd St., New York 17, N.Y.

International Paper COMPANY
BAGPAK DIVISION

BRANCH OFFICES: Atlanta • Baltimore • Boston • Chicago • Cleveland • Denver • Detroit • Kansas City • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco • IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto

NEWARK "End-Shāk" TESTING SIEVE SHAKER



Motion is important in making sizing tests. Conforms to recommendations for the motion to be used when making hand tests, issued by the Bureau of Standards.

Here, in the Newark "End-Shāk" unit, you get proper sustained hand motion mechanically. You get the best motion without being subjected to any human variation or weakness. This sturdy testing machine holds up to 7 full height sieves or up to 13 half height sieves. It is designed for 8 inch diameter sieves. Standard $\frac{1}{2}$ HP., 110-220 volt 60 cycle, 1750 rpm motor supplied. Special motor to order.

We'll be glad to send you prices and descriptive literature. And if you will outline your testing requirements we'll be glad to suggest the proper sieve series to use.

NEWARK
for ACCURACY

Newark Wire Cloth
COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

Philadelphia 3, Penna. San Francisco, Calif. Chicago, Ill. New Orleans, La. Los Angeles, Calif. Houston, Texas.
2311 Widener Bldg. 3100 18th St. 20 N. Wacker Dr. 520 Maritime Bldg. 1400 So. Alameda St. P. O. Box 1970

When inquiring check CP 6782 on handy form, pgs. 2-3

PACKAGING

**Case liner adhesives
feature retack plus
long open time . . .**

resist water penetration and
fungi attack

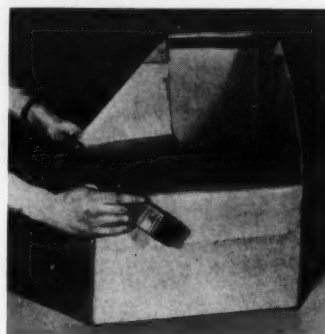
Uses: To seal water-proof bags, wraps, and case liners. Adhesive can be applied by machine or hand methods.

Features: Manufacturer's tests indicate that adhesive resists fungi, is flexible at 0°F, and resists water penetration for minimum of eight hours. Adhesive has fast initial tack, retack, and long open time.

Description: Water-emulsion adhesive was developed to meet requirements of military Specification MIL-A-140A; is suitable as grade A and B for subsistence and non-subsistence items.

Strong bonding of water-proof barrier materials, after water immersion tests and heat aging, is reported well within specification limits. Initial tack on machine and hand applications conform to normal speeds and timing of fabricating, assembling operations.

Adhesive can be applied to both surfaces in seaming operations and allowed to dry, then combined together to form permanent



Photograph shows manual application of adhesive

bond. Retack of adhesive to itself eliminates spoilage or waste when delays occur during fabrication.

Adhesive resists flow at high temperatures (140°F). This prevents seams from shifting, flowing, or separating after 24 hour subjection to this heat. Adhesive is available in 55 gal, 30 gal steel drums, and 5 gal steel pails.

(Product of Paisley Products, Inc., Dept. CP, 1770 Canalport Ave., Chicago 16, Ill. . . or for more information check CP 6783 on handy form, pages 2 and 3.)



RICHARDSON

BAGGING

EQUIPMENT

WORKS FOR

QUAKER OATS

In recent years, the nation's canine population has developed a voracious appetite for the well-known dry dog food, Ken-L-Biskit. Production soared and with it the need for a more rapid bagging system. Quaker Oats called in the Richardson Scale Company—specialists in materials-handling-by-weight. They recommended and installed a battery of Richardson E-50 Baggers. Result: A potential bottle-neck was eliminated and Fido was kept happy with plenty of Ken-L-Biskits.

This is just one of many instances where Richardson's 50 years of materials-handling-by-weight experience have proved valuable. Experience with materials from seed to feed and coal to chemicals enables Richardson engineers to recommend the best system or combination of systems to solve your particular problem. Remember, Richardson engineers have successfully solved numerous materials-handling-by-weight problems such as yours. A survey of your problem places you under no obligation, and can point the way to more profitable operation.

PROBLEM:

To bag rapidly and efficiently 25- and 50-lb. lots of Ken-L-Biskit. Weight of individual bags to be held to close tolerances.

SOLUTION:

Installation of a number of Richardson E-50 Baggers. Speed and dependability were illustrated by the tremendous yearly output that passed through these scales, enough to fill completely a train more than 10 miles long.

For information on Richardson Automatic Weighing Equipment, ask for Bulletin No. 0450. For information on Richardson Proportioning, Blending, and Process Control Equipment, ask for Bulletin No. 0550.

Richardson Scale Co., Clifton, New Jersey. Feeder-Weigher Systems of All Types: Automatic Bulk Weighing Hopper Scales, Including Conveyor-Feed Types — Continuous Feeder-Weighers—Automatic Bagging Scales — Bag-Sewing Conveyors — Packers — Process Control Panels. Branch offices in: Atlanta • Boston • Detroit • Minneapolis • Cincinnati • Wichita • Montreal • Omaha • New York • Pittsburgh • San Francisco • Toronto • Buffalo • Chicago • Philadelphia • and Houston.

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

7872

When inquiring check CP 6784 on handy form, pgs. 2-3

CHEMICAL PROCESSING

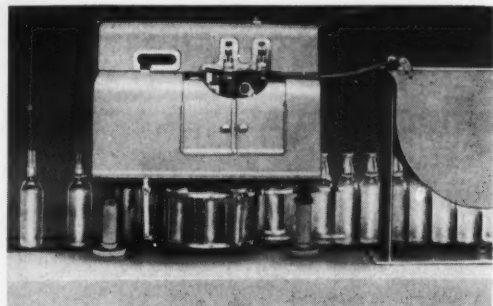
**Machine applies bands to bottles,
replaces laborious hand methods,
ends production "bottlenecks" . . .**

automatic device serviceable for any size or shape bottles up to $3\frac{3}{4}$ inches diam

Uses: To automatically apply plain or printed bands to bottles up to $3\frac{3}{4}$ inches in diameter. Limited to bands that don't require accurate register in relation to printing.

Features: Automatic banding machine enables bottling production line to move along rapidly without delay caused by hand-applied bands.

Description: World Automatic Banding Machine uses cellulose banding material, which is fed from roll into position over bottle prior to cutting. Bottle is indexed to receive band by



Machine applies bands automatically to any size or shape of bottle

starwheel feed. Band is opened by combination of mechanical and vacuum action, just prior to positioning of cut band over bottle. Finally, the band is stripped off plunger onto bottle neck and cap.

Simple attachments permit quick changeover to various sizes of bands and bottles. Operator's attention is required only to renew cellulose roll, and operator may tend other machines in bottling line. Length of band may be varied within ordinary limits although, for continuous production, band diameter remains fixed.

(Product of Economic Machinery Co., Div., of Geo. J. Meyer Manufacturing Co., Dept. CP, Worcester, Mass. . . . or for more information check CP 6785 on handy form, pages 2 and 3.)

**Avoids condensation damage
to stored materials**

Unit which offers method to eliminate atmospheric condensation in storage warehouses is described in two-page bulletin. System keeps temperature of stored material above dew point of the air. Since controller takes this corrective action before moisture conditions develop, major cause of storage losses can be avoided.

Specifications, features, and components of unit are described in two-page bulletin. Bul 000-8 is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 6786 on handy form, pages 2 and 3.

PROTECTION



Tough—like an alligator's hide! Fulton's W.P.P.L. (Waterproof Paper Lined) Bags protect your product against the detrimental effects of moisture and odors—an economical, easy-to-handle textile bag built to do the job of a more costly rigid container. Your product is fully protected with an inner lining of plastic or crinkled Kraft paper laminated with special adhesives to either cotton or burlap which safely, surely seals in your product . . . nothing gets in—or out! For full details, write your nearest Fulton factory today!

Call on Fulton too, for Polyethylene and Pliofilm Bags, and for Polyethylene Barrel Liners.

Fulton BAG & COTTON MILLS

Atlanta
St. Louis
Dallas
Kansas City, Kans.
Los Angeles
Minneapolis
New York City
Denver
New Orleans

When inquiring check CP 6787 on handy form, pgs. 2-3

6 major improvements in Edmont gloves

to fit your job requirements

**New flexible NEOX (reinforced neoprene) coating
gives firm, easy grip**



Never before a chemical and wear-resistant coated glove with such flexibility and grip. Far superior to ordinary neoprene. Most widely applicable of all coated work gloves.

**Redmont heavy-duty NEOX gloves have improved
safety-grip finish**



Finish cured into 30% thicker NEOX coating. Won't chip or peel. Safest glove made. Seamless wearing surface, extra-wide thumb span, curved fingers.

**New Grappler plastic gloves far outwear leather,
other plastics**



Coated with DUROX, 50% longer wearing, non-slip plastic, and made in new wing thumb, pre-flexed finger pattern that perfectly fits the hand.

Hand-fitting Monkey Grips with plastic coating



Second only to Grapplers for long wear and made in same pattern. Fits the hand all over; no bagginess; comfortable grip.

**New white Sani-Gluv meets special sanitation
requirements**



Liquid-proof all-white plastic coating in our new hand-fitting pattern with wing thumb and pre-flexed fingers.

**Improved white-fabric-lined Grab-Its, approved by
safety directors**



Long-wearing, sure-gripping rough finished natural rubber, bonded to new and sturdier white fabric.

Test these gloves at our expense: Send brief description (on business letterhead) of your operations, materials handled and temperature condition. Without cost, we will forward samples of the type gloves we recommend for testing on-the-job. Address

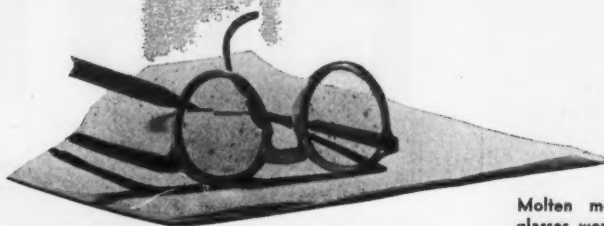
Edmont Mfg. Co., 1204 Walnut Street, Coshocton, Ohio
World's largest maker of coated industrial gloves



Edmont job-fitted gloves

When inquiring check CP 6788 on handy form, pgs. 2-3

Safety



Molten metal seriously pitted these safety glasses worn by a worker. Company replaces them without charge and puts them on exhibit for all employees to see and profit from

Entire Cost of Intensive Safety Drive Met Through Savings Occurring from Reduced Insurance Rates

Attacking the problem from both management's and labor's standpoint, company has developed safety program noteworthy for its completeness and the results achieved

INDICATING the efficiency of the safety plan which Ansul Chemical Co., Marinette, Wis. has developed is the fact that in the last six years of an intensive safety drive, resulting reduced insurance premiums have saved the company more money than the cost of the entire program. A necessary contributing factor to this accomplishment has been the attitude of Ansul's top management exemplified by the fact that the safety department has no fixed budget and that no request for safety equipment has ever been refused.

Ansul Chemical employs 450 people and has achieved four perfect years — no lost-time accidents — out of the last seven. Main operations are a mechanical division making fire-fighting apparatus, and a chemical division manufacturing sulfur dioxide and methyl chloride.

Various aspects of the thoroughgoing Ansul safety program are treated in the following discussion.

Employee Participation

Machine operator participates with foreman and safety director in discussion and adopting of



One phase of safety program is cooperation on new safety devices between safety director, foreman and plant employee. Here, the tube cutter operator points out safety shortcomings of his machine to foreman on left and Ansul's safety director, Joseph Banach, on right.

safety guards. Operator's opinion in designing safety equipment for his machine is valued equally with that of the foreman and safety director — in some cases, even more so, as he has to work with the machine. This policy instills a feeling of participation and stimulates a desire to work safely. Employees will accept safety equipment more readily if they feel they've had a hand in its design and application.

Safety codes, general and specific plant hazards are discussed in monthly meetings with foremen. Latter receive three monthly safety publications. Also get pocket secretaries issued by National Safety Council and automatic pencils with Green Cross of the Council.

Employee Protection

Safety shoes. Company pays half original cost, replaces without charge all shoes damaged in would-be accidents. So far this year, six accidents have been avoided by safety shoes. Cost of this aspect of program more than offset by compensation that would have been paid had shoes not been worn.

Safety glasses. Company pays between 75 and 100% of original cost (depending on type of corrective lens) and replaces damaged glasses without charge. Damaged glasses and shoes are exhibited as part of program to promote safety.



Showing the safety equipment carried by Ansul Rescue Squad truck. In addition to carrying out first-aid function in plant, Squad's services are available to residents of adjoining communities

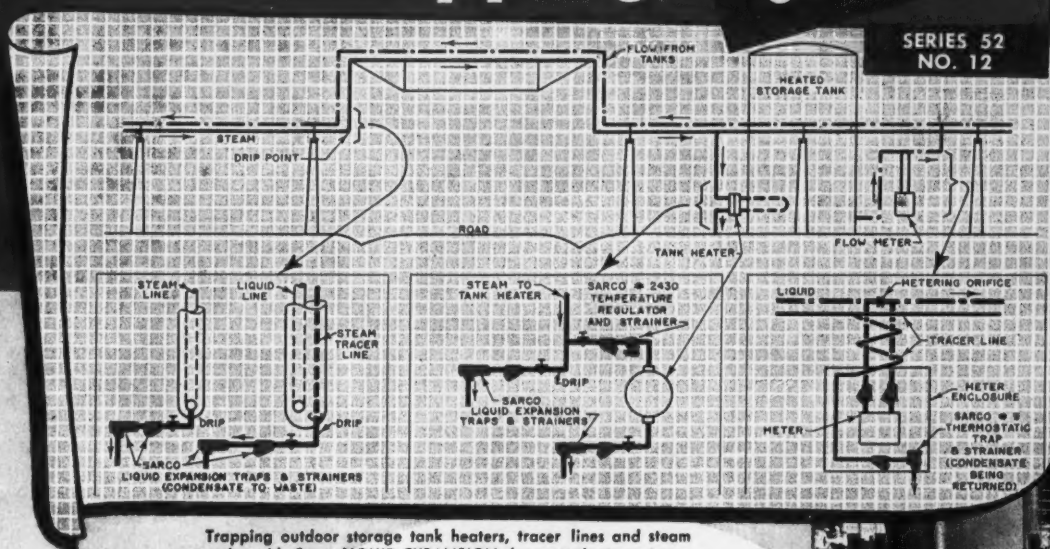
Completely-equipped dispensary, including diathermy, ultra-violet ray, and all standard equipment. Trained nurse on duty at all times, physician available at all times and holds office hours three days a week. Reporting slight accidents is encouraged by stressing employee's good judgment in doing so.

Audiometer program. Each employee is given an audiometer test to determine if his hearing interferes with his job or if he is sensitive to normal noise found in his job situation. If so, the problem is

(Continued on page 128)

Steam Trapping

OUTDOORS



Trapping outdoor storage tank heaters, tracer lines and steam mains with Sarco LIQUID EXPANSION thermostatic steam traps.

Have you the problem of removing air and condensate from outdoor storage tank heaters, tracer lines and mains?

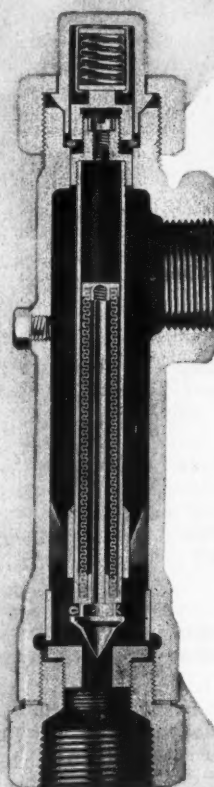
Sarco, and Sarco alone offers you a special LIQUID EXPANSION thermostatic steam trap designed especially for this type of installation.

The Sarco LIQUID EXPANSION thermostatic steam trap has these advantages:

1. Needs no protection against freeze ups.
2. Discharges condensate at adjustable temperatures below 212° F., making it possible to use some of the sensible heat of the condensate.
3. Small size, light weight, large capacity — as easy to install as a pipe elbow.
4. Not affected by water-hammer, vibration, pressure pulsations or superheat.
5. And just as effective indoors too.

Write for new Bulletin 260-4, free for the asking.

SARCO COMPANY, INC., Empire State Bldg., New York 1, N. Y.
SARCO CANADA LTD., TORONTO 8, ONT. REPRESENTED IN PRINCIPAL CITIES.



Sarco No. 871 LIQUID EXPANSION thermostatic steam trap for outdoor applications. Discharges condensate in a continuous stream at temperatures always below 212°F.

SARCO
improves product quality and output

416

1. Removing air and condensate from coil heaters in flow meter cabinets with Sarco No. 9 balanced pressure thermostatic steam traps.
2. Steam jacketed asphalt lines and a jacketed pump drained by Sarco No. 871 LIQUID EXPANSION steam traps. (Globe Roofing Products Co. Whiting, Ind.)
3. Sarco No. 871 LIQUID EXPANSION Steam Traps draining air and condensate from steam tracing lines.

When inquiring check CP 6789 on handy form, pgs. 2-3

Pyrene

REG. U.S. PAT. OFF.

**A PYRENE WON'T STOP CARELESSNESS—
IT WILL KILL FIRES!**

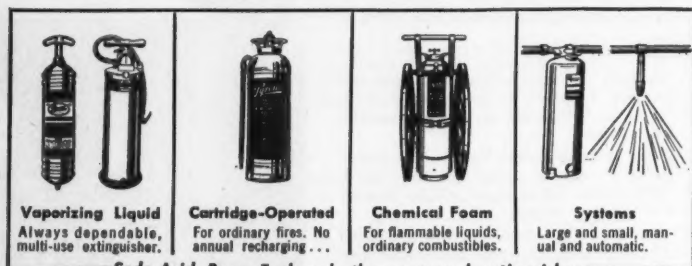


A cardboard locker caught fire in the basement and soon this whole Dayton, Ohio, building was ablaze. Date: January 6, 1950. Loss: \$291,500.

There's a Pyrene for every fire hazard

The right extinguisher at the right time can often prevent enormous losses. Whatever your fire hazard, there's a Pyrene* to cope with it—for Pyrene makes everything from hand extinguishers to complete automatic fire-fighting systems.

*T.M. Reg. U.S. Pat. Off.



Vaporizing Liquid
Always dependable,
multi-use extinguisher.

Cartridge-Operated
For ordinary fires. No
annual recharging...

Chemical Foam
For flammable liquids,
ordinary combustibles.

Systems
Large and small, man-
ual and automatic.

Soda-Acid, Pump Tank and other approved extinguishers

PYRENE MANUFACTURING COMPANY
691 Belmont Avenue Newark 8, New Jersey
Affiliated with C-O-Two Fire Equipment Co.

When inquiring check CP 6790 on handy form, pgs. 2-3

SAFETY

**No one gets burned
handling hot items—
up to 800°F...**

all leather gloves are pliable
and heat-resistant

Flexible leather gloves are impregnated with insulating and refractory materials to provide resistance to heat up to 800°F. They are available in mitt or separate finger styles. Former model is reversible and can be worn on either hand.

Inner lining is sewn into finger tips to avoid separation of plies when glove is removed from per-



Worker can safely handle hot objects with heat-resistant gloves

suring hand. Model 113G is intended for temp up to 500°F; 213G with reinforced, pre-shrunk palm withstands temp up to 800°F.

Gloves are 11, 12, or 13 inches long; and are intended to protect workers handling hot materials in foundries, assembly lines, welding, molding, and similar tasks.

(Product of Mine Safety Appliances Co., Dept. CP, Braddock, Thomas, and Meade St., Pittsburgh 8, Pa. . . or for more information check CP 6791 on handy form, pages 2 and 3.)

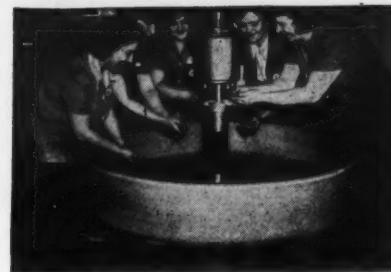
Lists references on air pollution

Compiled in first half of 1952, current references on air pollution are listed in 20-page appendix to earlier bibliography. Publication is first of proposed series to maintain reference manual in up-to-date condition.

To obtain "Air Pollution Abatement Manual, Appendix I" remit 35c direct to Manufacturing Chemists' Association, Inc., Dept. CP, 246 Woodward Bldg., Washington 5, D.C.

BRADLEYS HELP MAKE THE PLANT..... A

**GOOD
PLACE
TO
WORK**



Adequate facilities for washing are now considered important by managements. Such facilities include sanitary Bradley Washfountains as pictured above.

Bradleys Save Water and Installation Cost

One hot and one cold water supply and one drain are the only connections required for a Bradley that serves up to 10 workers simultaneously.

There are no faucets to touch, the spray of water being supplied by the central sprayhead. Other advantages are explained in our Catalog 5204... Why not write for a copy now... BRADLEY WASHFOUNTAIN CO., 2399 West Michigan St., Milwaukee 1, Wisconsin.

BRADLEY
Washfountains

Distributed Through Plumbing Wholesalers

Write for
Illustrated
Catalog 5204

When inquiring check CP 6792 on handy form, pgs. 2-3



Here's **INSTANT RELIEF** from cold, aching feet, at work or at home, sitting or standing! THERMO-MAT emits PENETRATING RADIANT WARMTH extending from toes to knees! Licks cold floor problem everywhere—drafty locations, unheated rooms, booths, concrete floors, etc.! Unaffected by dampness.

Plugs into 110 Volt socket—uses only 125 Watts. Size 14" x 22", full neoprene covered. (No Rubber)

\$1200 Shipped
Postpaid

SAFE, ECONOMICAL Order now by mail for all uncomfortable locations. Describe conditions of use, type of floor, outside or inside installation.

THERMO-MAT CO.

814 SOUTH ROBERTSON BOULEVARD • LOS ANGELES 35, CALIFORNIA

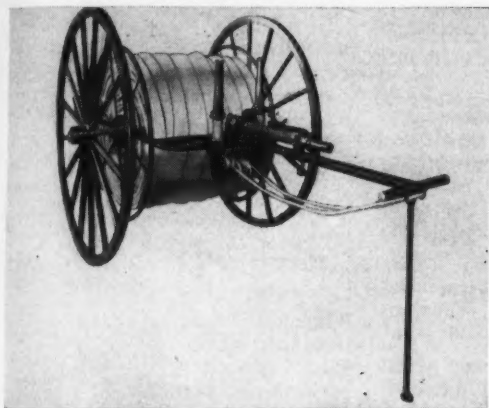
When inquiring check CP 6793 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Faster fire fighting permitted with lightweight hose carts

Fire hose carts that are light in weight because of their all-welded construction can be brought into action faster than heavier units. Carts offer a compact means for storing hose lines, fire axe, crowbar, nozzle, and tools so that they are ready for instant service.

Hose carts are attractive in appearance and durable, giving long service even under rough usage. Either



Lightweight hose cart can be brought to scene of fire quickly

wood or steel wheels are available. Carts are manufactured with tubular steel or bar steel frames in different types and sizes and with different hose capacities for various applications.

(Product of Wirt & Knox Mfg. Co., Dept. CP, Sedgley Ave., York & 23rd St., Philadelphia 32, Pa. . . or for more information check CP 6794 on handy form, pages 2 and 3.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with CHEMICAL PROCESSING many years ago to help busy men like you!

THE EDITORS

Loading ramps combine safety and efficiency

Lightweight magnesium loading ramps are designed to speed and make safe loading and unloading problems on shipping docks. Units incorporate many features to increase safety in operations where they are used.

Four-page folder, containing ten photographs, outlines and illustrates features, uses, and specifications of ramps. "Magnesium Dockboards" is issued by Magnesium Company of America, Dept. CP, East Chicago, Ind. When inquiring specify CP 6795 on handy form, pages 2 and 3.



Who's Kidding Who?

YOU'RE kidding YOURSELF if you think every safety valve is equally safe.

We know of one case where inspection showed that 27 out of 36 safety valves were stuck tight—would not have operated at pressures far above the set point—yet the user of those valves thought he had protection. He could have been stuck right along with those 27 valves.

If you want 100 per cent safety—and you'd hardly want less—there's one sure way to get it—specify BalanSeal or FarriSeal Safety Valves.

Why?

Because they can't stick, plug or corrode. Critical working parts are permanently iso-

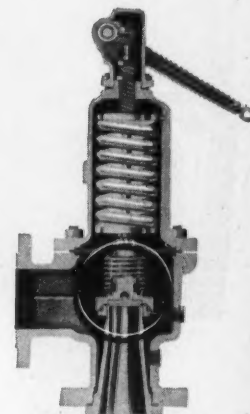
lated from any contact whatever with the lading.

Because they're unaffected by back pressures in the discharge manifold due to its own operation or to the opening of other valves in the line.

Because these features make it possible for you to use smaller discharge piping, an economy which often amounts to substantially more than the cost of the valves.

You'll be interested in the engineering of BalanSeal and FarriSeal Valves—design which is rapidly gaining acceptance in hundreds of successful installations.

Ask for our "8-Minute Brief."



Your Safety's REAL With FarriSeal



ENGINEERING CORP.

505 COMMERCIAL AVE., PALISADES PARK, N. J.

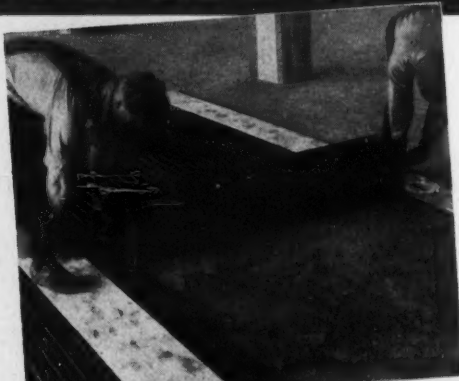
AFFILIATES

Farri Stacon Corp. Temperature Regulators • Farri Flexible Valve Corp. Pinch Type • Farri Hydrotorque Corp. Remote Controls • Farri Hydroseal Corp. Elastic Piston Seals

When inquiring check CP 6796 on handy form, pgs. 2-3

4" Grates

For
Executives
and Engineers
Responsible for
Engineered
Plant Services



KLEMP Metal Gratings

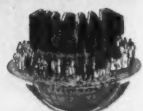
- Protect against floor wastes
- Reinforce all concrete surfaces
- Insure fireproof, non-slip footing for men and traffic
- Insure efficiency with safety
- Insure protection, plus comfort through complete ventilation

The Klemm Metal Grating Corporation has been serving the needs of those men responsible for the safety of plant employees and the maintenance of all types of flooring for almost half a century. This includes stairways, stair treads, runways, catwalks and tower stairs in industries where there are flooring problems, such as chemical and gas plants, power stations, oil refineries, or where there are turbine rooms and pump rooms. During this time, Klemm has produced and patented several specialized gratings including Hexteel and Floorsteel.

Klemm's engineers have exclusively specialized in the fabrication of gratings such as Hexteel Surface Armor and Floorsteel Flexible Floor Armor for reinforcement of all surfaces where concrete or mastic are applied.

Klemm's diamond riveted and welded gratings are ideal for foot and plant material traffic wherever rugged strength is needed in structural footwalks, stair treads and open steel flooring.

We solicit the opportunity to let Klemm's engineers help solve your most difficult grating problems. Send in your blueprints for quotations today. All types of Klemm Gratings are available for immediate shipment.



We Tread the World with Safety

KLEMP METAL GRATING CORPORATION

When inquiring check CP 6797 on handy form, pgs. 2-3

SAFETY

Safety Drive

(Continued from page 125)

explained to him and every attempt made to place him in other comparable, but less noisy work. This is a valuable industrial relations tool, since noise causes tensions and leads to dissatisfied employees.

Sight screening program. Employees' eyesight is tested and considered in job placement. If corrective measures are thought necessary, employee is informed. He decides if he wants to obtain new glasses or get other eye care — if so he goes to private doctor. Both this and the preceding program are used for new and old employees alike.

Blood typing program. Of Ansul's home office force (Marinette), 75% have had their blood typed. If any sick Ansul employee or dependent needs blood, the safety department can quickly locate matching types and obtain 1/2-dozen volunteers. The need occurred in several cases within the last year.

First aid program for employees and wives. Twice a year, in the spring and fall, safety department holds weekly evening courses in first aid. Thus far about 35% of employees and wives have joined up.

Ansul Rescue Squad. A highly trained group of 28 male employees provides immediate first aid in case of an accident in the plant, in employees' homes, or anywhere in the community. Squad's services are available to everyone in Marinette, Wis. and neighboring Menominee, Mich. In 2 1/2 years more than 200 calls for help have been answered and more than 20 lives saved. Employees are all volunteers and receive no special pay for this service.

Plant fire brigade. Thirty-five men are specially trained to respond to fire calls. Brigade chief, a foreman, spent two weeks with Milwaukee Fire Department at company expense. All brigadiers go through 2-week training course after regular hours at overtime pay.

First-aid kits placed near all work benches and machines for immediate treatment of minor injuries. Also plant fire protection, in the form of extinguishers, hose houses, sprinkler systems, etc, greatly exceeds minimum standards.

Careful screening of employee's (old and new) mental and physical condition as revealed by scientific testing. Employee must be satisfied with his job and be able to handle it safely.

Cold vaccine program. Employees only at this point, with about 80% participation. Will probably be extended to take in dependents.

All company cars and trucks, about 60, are equipped with fire extinguishers, flares, and first-aid kits. Drivers receive regular fire fighting training. Company plans to add safety belts for each salesman's car. Also planned for the future is a safe driving contest for all employees who operate company cars.

Promoting Interest

New safety posters are placed on nine plant bulletin boards each week.

Yearly bonus (day and a half's pay) to all employees if the company completes one full year without a lost-time accident. With a financial stake in



For greater
**CHEMICAL
RESISTANCE**



576 apron with patch
586 apron without patch
in many sizes



insist on APRONS

by *Sawyer*

Highly resistant to acids, alkalis, oils, greases and other chemicals. Not affected by gasoline or most solvents.

Easy to clean — can be scrubbed in hot water or caustic solutions — or dry cleaned — positively will not crack, blister or peel.

100% waterproof — made with top quality base fabric saturation-coated first and then coated with 6 coats of Neoprene Latex.*

Tough as mule-hide — wear like iron, take endless snagging, rubbing, scraping, and still give full protection.

Also: Industrial suits, three-quarter and long coats, coveralls, and many other styles. All clothing made in black and yellow.

*Sawyer fabrics are coated by
The Brunse Company, a division of

**THE H.M. SAWYER
& SON CO.**

FROG BRAND

CAMBRIDGE
MASSACHUSETTS

When inquiring check CP 6798
on handy form, pgs. 2-3

CHEMICAL PROCESSING

an accident-free year, employees are encouraged and stimulated toward more active participation in the safety program.

Safety is promoted among employees. Pamphlets of the National Safety Council, American Red Cross, National Fire Protection Association, etc., stressing various phases of safety on the job, in the home, on the highways, are sent out regularly to all employees. Information racks at high-traffic areas in plant contain monthly safety messages. Personalized letters (each employee's name written at top) are mailed to entire plant force by safety director several times a year. These letters discuss seasonal safety hazards such as vacations, winter sports, Christmas-tree-in-the-home, etc. Company publication, the "Ansul Fuse Plug", gives monthly recognition to safe workers, departments, etc. Also list awards received by company, cites consecutive man-hours or man-days without accidents.

Plant cooperates closely with the Wisconsin Council of Safety, and National Safety Council. Working with these groups keeps Ansul's safety department abreast of developments in safety field.

Safety director of Ansul Chemical Co. is Mr. Joseph J. Banach. The safety department is under the jurisdiction of the personnel manager who reports directly to the firm's president.

(Information courtesy of Ansul Chemical Co., Dept. CP, Marinette, Wis.)

Falls on wet, oily floors can be avoided by use of absorbent . . .

material also reduces fire hazards in plants

Uses: For use on floors to absorb oil, grease, water-soluble lubricants, paints, inks, and such solvent thinners as kerosene, naphtha, oleum spirits, and gasoline.

Features: Absorbent provides a slip-proof surface on wet or oily floors, decreasing possibility of serious injury from falls. Hot bearings falling on a blanket of material will not start a fire. Product eliminates use of wood chips, sawdust, rags, and other flammable substances.

Description: Pickup all-purpose absorbent soaks up 122 percent of its weight in water or 110 percent of its weight in oil. Other compounds used for the same purpose absorb on average only 75 percent of their weight in water and 65 percent of their weight in oil.

Material is non-abrasive, being harmless to floors and shoes of employees. Floors do not become gummy or muddy. Uniformly small particles provide fast "blotter" action.

Absorbent is approved by Underwriters' Laboratories for reducing accident and fire hazards in industrial plants. It is available only in Midwest for the time being.

(Product of The Diversey Corporation, Department CP, 1820 Roscoe Street, Chicago 13, Illinois . . . or for more information check CP 6799 on handy form, pages 2 and 3.)

New Polyken Tape BEATS CORROSION



CORROSION CONTROL! Here's positive evidence in this photograph where a test section of pipe has been completely protected by Polyken Tape No. 900 while unprotected pipe is shown in advanced stages of corrosion.

Announcing a superior, exclusive Polyken Tape Coating to help you fight corrosion, reduce down time, give greater protection for more years at the lowest possible cost.

Here's the biggest news in corrosion prevention, of this or any year!

Polyken, long the leader in plastic Protective Tape Coatings for corrosion control, now presents Tape No. 900—a tough, easy-handling, low cost coating that offers greater protection for more years.

Polyken customers helped engineer this new coating—backed up our own 3½ years of product research with their own on-the-job tests.

Apply it by machine, or apply it by hand—either way, Polyken No. 900 goes on *fast*—in a one-step process requiring no heat, liquids, drying time, or clean-up time. Equally effective above or below ground.

Polyken No. 900, black (also available in gray, No. 910)—the new polyethylene plastic tape coating—is made by Polyken's own exclusive process. It's the latest in the line of Polyken Protective Coatings. Mail the coupon today for a free sample and more details.

Superior corrosion resistant qualities of POLYKEN'S Newest Protective Tape Coating

- **33⅓% THICKER FOR GREATER PROTECTION**
 - high puncture and abrasion resistance
 - high dielectric strength
 - increased tensile strength
- **MADE FROM ORIENTED POLYETHYLENE**
 - conforms to odd-shaped surfaces
 - superior moisture vapor barrier
- **NEW ADHESIVE MASS**
 - adhesion doubled
 - superior aging qualities
 - superior high and low temperature performance
- **AVAILABLE IN TWO COLORS**

TAILORED TO YOUR JOB

Polyken®

INDUSTRIAL TAPES

Department of Bauer & Black
Division of The Kendall Company

Polyken, Dept. CPM
222 West Adams St., Chicago 6, Ill.
Please send me specifications, samples, and further information on Polyken's new Polyethylene Protective Tape Coating No. 900.

Name _____ Title _____

Company _____

Street Address _____

City _____ Zone _____ State _____

When inquiring check CP 6800 on handy form, pgs. 2-3

For "Custom
Engineered Design"
At Low Unit Cost



specify

STANDARDIZED Pfaudler stainless steel heat exchangers

Engineered to your own individual requirements, Pfaudler stainless steel heat exchangers are backed by years of experience in the process industries. Yet, they cost you no more than standard, assembly line units.

THE PFAUDLER FLEXIBLE STANDARD program makes this unusual economy possible. A large inventory of standard heads, tubes and shells allows you to select the most applicable combination of length and diameter for a given heat transfer area. These can be readily equipped with nozzles of any size and in any position—either flanged or threaded. And new production line methods make possible rapid deliveries (4 to 12 weeks).

COMPLETE LINE — The flexible standard program applies to fixed tube sheet, single or multi-pass, tube and/or shell side stainless steel units up to 10" in diameter. In addition, Pfaudler heat exchangers are available with shell diameters from 4" to 24" in four basic types of construction . . . fixed tube sheet condenser, outside packed floating head design with removable tube bundle and shell, internal floating head with removable tube bundle and shell, "U" tube construction with removable bundle.



SEND FOR THIS PFAUDLER DATA BOOK — Packed with facts, this 40-page heat exchanger manual has all the data you need to work out capacity and type problems. Easy-to-follow tables, curves and charts. Full details on Pfaudler heat exchangers. Mail the coupon for your copy.

Pfaudler

Engineers and fabricators of corrosion resistant
process equipment since 1884

GLASS-LINED STEEL • HASTELLOY • ALUMINUM • CARBON
STEEL • SOLID OR CLAD STAINLESS STEEL • NICKEL •
INCONEL • MONEL

THE PFAUDLER CO., Dept. CP-12, Rochester 3, N. Y.

Please send me the Pfaudler Heat Exchanger Manual No. 837

Name

Title

Company

Address

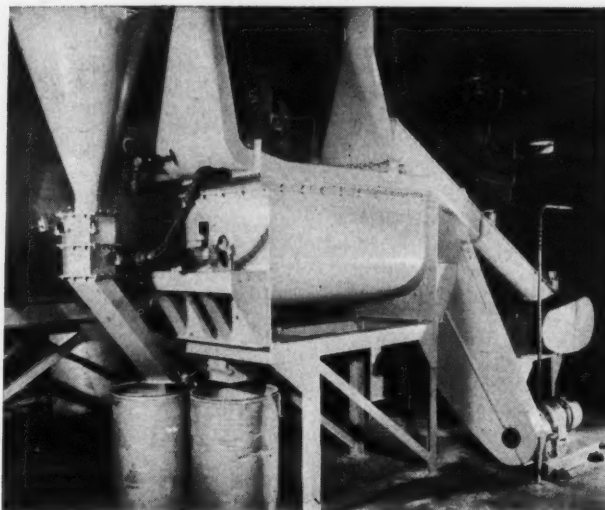
City Zone State

When inquiring check CP 6801 on handy form, pgs. 2-3

130

*Processing
Equipment*

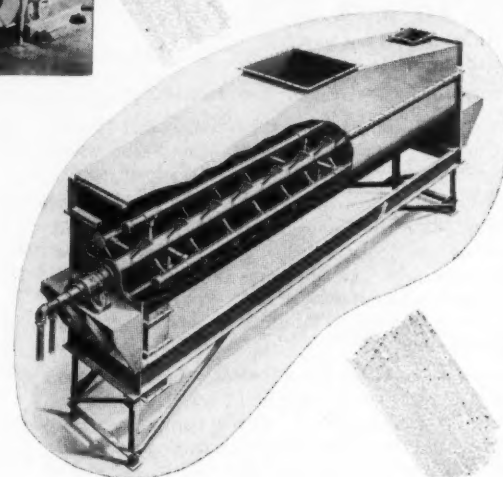
Drying, Cooling, and Recovery of Solvents Are Economically Carried on in Compact Unit



Dryer is particularly effective
for materials containing fine
particles since method of
operation minimizes dusting

Dryer utilized for the recovery of solvents

Cutaway view of dryer shows hollow
shaft and outrigger tubes through which
steam, hot liquid, or coolant circulate.
Paddle conveyor is also revealed



USES: Unit is effective in treating a wide variety of chemicals, pharmaceuticals, vegetable oil mill products, and many other materials.

Features: Economical drying and cooling, as well as solvent recovery, are handled by single unit. Valuable by-products can also be obtained by means of dryer. Where space limitations are a factor, unit provides an ideal installation. Even the smallest sizes, however, have high capacity. Since air currents do not circulate through material bed, dusting is practically eliminated. For this reason, it is possible to treat products which readily become air borne.

Description: Monotube Dryer consists of a paddle conveyor on a hollow shaft, the only moving part, turning in a U-shaped trough or housing. Steam, hot liquid, or coolant is circulated through shaft and outrigger tubes. Material is churned while being conveyed length of trough, producing a highly efficient transfer of heat. Constant agitation assures uniform drying without overheating. Dryer is made in two trough diameters — 24" and from 5 to 10' in length; 30" and from 5 to 20' in length.

Unit can be used for products which must be dried at temperatures above or below that of steam, merely by employing another circulating medium. For example, hot water may be used for lower temperatures and hot oil or other liquid for higher temperatures. Dryer is also capable of being operated under either high or low pressures. Usual set-up in solvent recovery is for warm air to carry vapors out to be cooled below dew point.

Dryer is strongly constructed to insure trouble-free operation and long service life. Operating

and maintenance costs are at a minimum. Where required, fabrication can be of Monel or stainless steel.

In one installation, a Pennsylvania chemical manufacturer is able to cool 250 lb of magnesium sulfate per hour. Temperature of material is reduced from 210 to 150°F, using 70°F water as coolant. This is typical of many applications in chemical industry.

In another installation, two dryers are used by a pharmaceutical manufacturer to recover solvents formerly lost in processing. Since product is heat sensitive, dryer of high efficiency and maximum temperature limit of 140°F was needed. Corrosion resistant construction was also required.

In this operation, material is fed to Monel dryers by screw conveyors. Then solvent in wet solids is carried out of dryer by warm air and cooled below dew point. Condensed solvent can then be re-used. Recovered solvents paid for cost of the two units in six months.

(Monotube Dryer is manufactured by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. . . . or for more information check CP 6802 on handy form, pages 2 and 3.)

Liquefaction and blending of chemicals facilitated by compact plant . . .

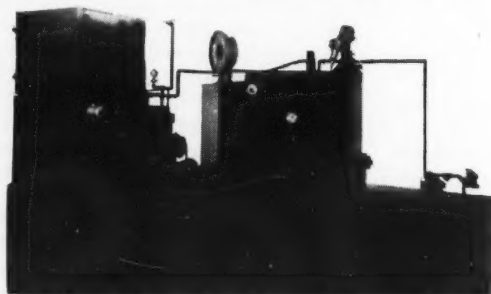
equipment needed for production of many compounds available in one complete system

Uses: For melting and liquefying solid and viscous chemicals and other materials. In addition, equipment blends and transfers accurately weighed quantities of those liquefied chemicals and other liquids, as required in formulation and packaging of many finished products. It also handles the injection of liquids into dry materials being compounded. Dry material can be produced with addition of some other equipment.

Features: Consolidating of all of equipment into one system simplifies liquid formulating and blending. Compactness and self-supporting feature provide for installation of complete plant in existing buildings in only 8 x 17' of floor space and 8½' of head room.

Description: Ready-To-Run Uni-Blender Liquid Formulating Plant consists of a number of separate

(Continued on next page)



Blender and liquid formulating plant. Melt kettle and steam heating chamber are shown at left and platform scale in center. Measuring and blending tank, with agitator, is at right

you save money (less waste)
you save time (almost automatic)
and you get

UNIFORM GRANULATION

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★ You save money when you produce granulated products with *AirSet* Roller Mills because there's less waste. And new automatic design features save operators' time. You have instant and complete control of *AirSet* Roller Mills — one or a battery. Best of all, you get *uniform granulation with minimum fines*. Better feed distribution and uniform pressure at ends of rolls provide ideal grinding for preparation of most chemicals. Push-button control, automatic roll set and roll release and other design improvements give you new grinding efficiency and the closest approach to automatic milling yet devised! They save you money and time. Contact your nearby A-C sales office for complete information or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3613



Motor and Texrope Drive available with *AirSet* Mill as a complete engineered unit.

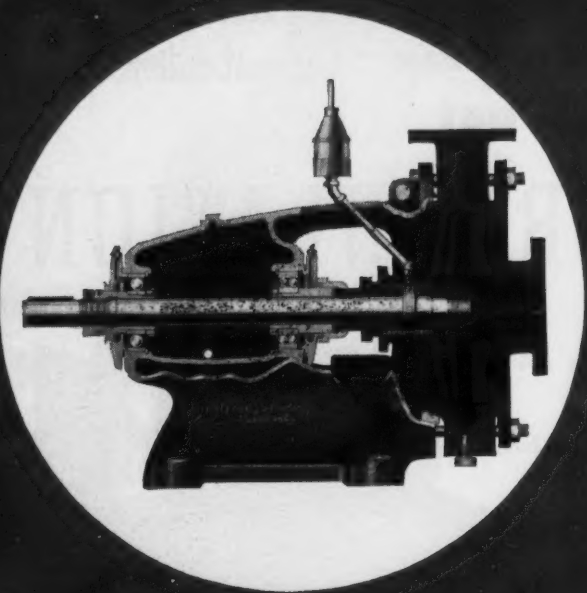
AirSet and *Texrope* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

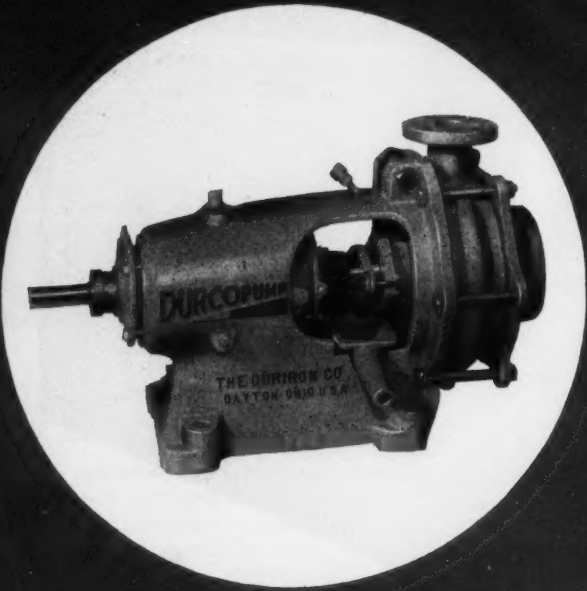


Chemical Milling and Processing Equipment

When inquiring check CP 6803 on handy form, pgs. 2-3



THE SERIES R



FOR OWNERS OF SERIES M DURCOPUMPS:

Many parts of the Series R Durcopumps are interchangeable with the Series M. It is possible for owners of these older pumps to convert to the Series R, thus taking advantage of design improvements. Write for Bulletin P/2 on Conversion.

For acid handling: THE NEW DURCOPUMPS PROVED IN ACTUAL SERVICE

DURCOPUMPS

In actual service for more than a year, the Series R Durcopumps incorporate the best features of the earlier Series M Pumps with design changes which have improved performance and reduced maintenance.

Wet ends, of course, are interchangeable for meeting changing conditions. Among other improvements are a better stuffing box design, through-bored frame for positive alignment, and a more rugged impeller and heavier shaft for better balance and longer life. All features of the Series R Durcopumps are discussed in Bulletin P/1.



THE DURIRON COMPANY, INC.
Dayton, Ohio

PROCESSING

(Continued from preceding page)

units integrated into a complete system. This enables user to obtain individual units as required. Included in system are melting kettle, steam heating chamber, platform scale, measuring and blending tanks, and impeller agitator (optional). Miscellaneous equipment is also included for liquid pumping, blending, injection, and transfer.

Closed design and vapor-tight construction reduce occupational hazard. Production efficiency is increased, with low installation and maintenance costs. Equipment can easily be moved to other locations.

Equipment is used in insecticide industry for melting and liquefying technical grade toxicants required for compounding liquid sprays and dust concentrates. Melt kettle and steam heating chamber provide for melting 1000 lb of Toxaphene within 30 minutes. BHC-DDT can be readily melted in equipment, utilizing to advantage eutectic characteristic of mixture.

(Product of A. E. Poulsen & Co., Dept. CP, 3305 E. Slauson Ave., Los Angeles 58, Calif. . . . or for more information check CP 6804 on handy form, pages 2 and 3.)

Bulletins furnish info on humidification

Five comprehensive bulletins include extensive information on the subject of humidification and its applications in specific industries. One bulletin contains general information on subject of humidification — definitions and related material as well as photos and descriptions of equipment. Four other individual booklets contain discussion of humidification as related to the printing and paper trade, textile industry, tobacco industry, and leather industry, respectively. Problems, solutions, and equipment involved are discussed in each bulletin.

Bulletins are issued by Abbeon Supply Co., Dept. CP, 179-15 Jamaica Ave., Jamaica, N. Y. When inquiring specify CP 6805 on handy form, pgs. 2 & 3.

◀ For more information on product at left, specify CP 6806 . . . see information request blank between pages 2-3.

PROCESSING EQUIPMENT

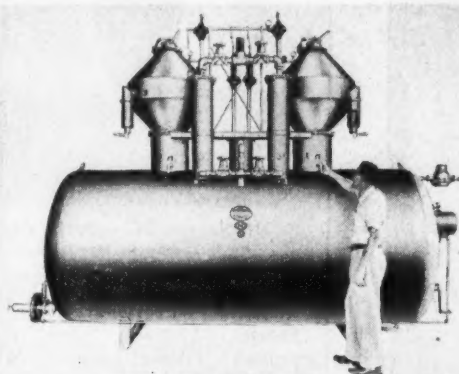
Continuous flow of acetylene produced by generator . . .

unit which can supply large quantities of gas is economical to operate and maintain

Uses: To supply acetylene to points of usage throughout plant by pipe line in same manner that water, air, and other utilities are handled.

Features: Virtually automatic acetylene generator is designed to produce a continuous flow of gas. Unit is able to produce large quantities of acetylene at low cost, with minimum maintenance.

Description: Model "A-Twin" Stationary Acetylene Generator is so named from two identical carbide hoppers atop tank. Compactly built to occupy a minimum of space, unit requires little attention to keep it in production. Once generator is placed in operation, only two manual operations are required to keep it in production. Hoppers must



Compact generator built to supply acetylene

be filled with calcium carbide when empty, and necessary amount of water must be metered into tank. Both jobs can be done simultaneously. When supply of carbide in one hopper is exhausted, second hopper automatically goes into service.

Numerous mechanical devices and operating record charts available assure safe operation. Dehydrator rubber throat at base of each hopper maintains dry atmosphere around carbide feed valve, preventing clogging. Flexing device wipes splash protector and dehydrator tube clean each time carbide hopper is refilled. Automatic water level control permits correct amount of residue to be discharged each time tank is filled with water.

Even regulation of acetylene pressure is obtained by means of vibrating valve that allows carbide to flow into tank only when acetylene is being withdrawn. As carbide is fed into tank and desired acetylene pressure reached, vibrating valve closes and shuts off flow of carbide.

Unit can be operated at any pressure up to 13 psi. Since generator is of medium pressure type, acetylene can be forced through long pipe lines without use of compressors. Tank temp water control device and carbide loader are available.

(Developed by The Sight Feed Generator Co., Dept. CP, West Alexandria, Ohio . . . or for more information check CP 6807 on handy form, pages 2 & 3.)



His experience will help you reduce costs!

Since 1889, Swenson Engineers Have Been Leaders in the Design of Process Equipment for the Chemical Industries

When you call on Swenson, you start with an important extra advantage! That's because the Swenson engineer has *all* of the many years of Swenson experience at his command . . . and the knowledge of how it can be used to serve you better, whether your problem is evaporation, filtration, spray drying or crystallization.

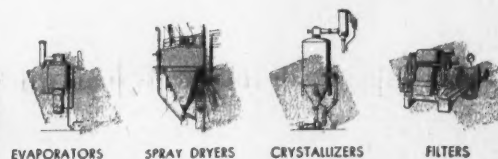
Swenson representatives are *engineers* equipped to help you not only in the initial approach to the problem but in all its phases . . . analysis, layout, pilot plant operation, design and recommendation of equipment. It's the kind of help which has enabled leading chemical firms to achieve improved efficiency in processing . . . and *most important*, to reduce costs and make bigger profits!

SWENSON EVAPORATOR COMPANY

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SINCE 1889



EVAPORATORS

SPRAY DRYERS

CRYSTALLIZERS

FILTERS

When inquiring check CP 6808 on handy form, pgs. 2-3

PROCESSING

Tank heating of liquids facilitated by molded sparger nozzles . . .

resist corrosion, are easily replaced when worn

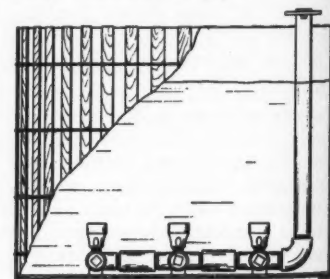
Uses: For heating of liquids in tanks with steam.

Features: Nozzles provide quick, uniform distribution of heat over a large volume of liquid. Units are molded of Haveg 60, a material which is highly resistant to acids, salts, and solvents. When required, Haveg 41 is used.



Nozzle can be easily installed by threading to sparger line

Costly maintenance in replacing sparger pipe is overcome by nozzles. Formerly when steam pressure caused holes to wear badly, it was necessary to install an entire sparger pipe. When wear affects present nozzles, individual replacements can be easily threaded to pipe.

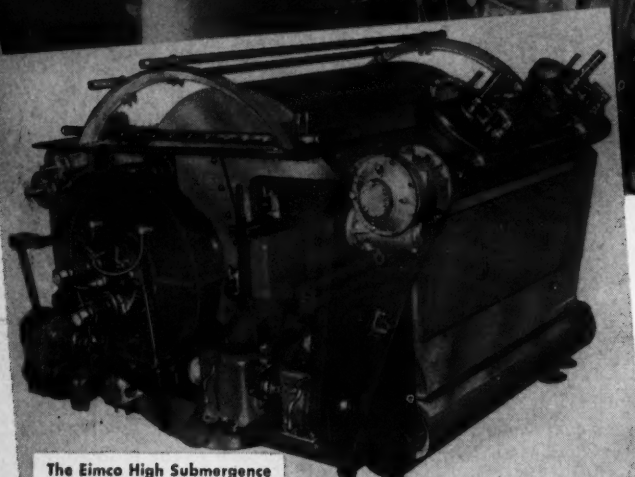


Chemicals in tanks can be quietly and evenly heated with sparger nozzles

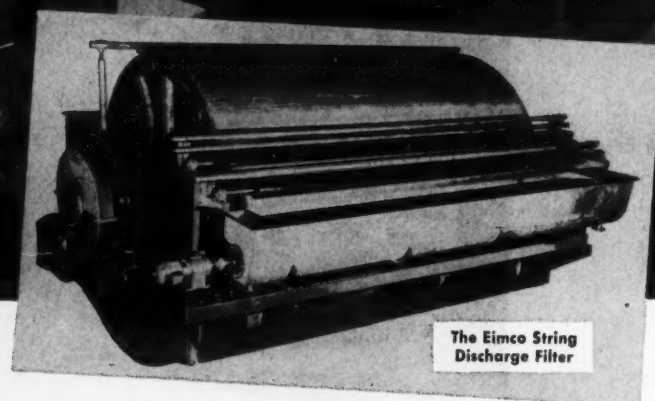
Description: SK Haveg Sparger Nozzles are installed by drilling and tapping steam line to take $\frac{1}{2}$ " male pipe thread on unit. Nozzles can also be cemented in place. Tank area determines piping layouts and size of steam line

For more information on product at left, specify CP 6809 . . . see information request blank between pages 2-3.

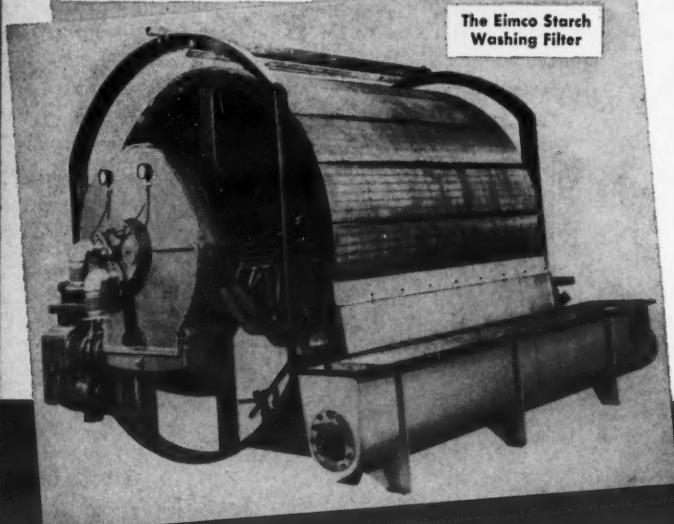
Filters for Starch



The Eimco High Submergence Precoat Filter



The Eimco String Discharge Filter



The Eimco Starch Washing Filter

In the Starch processing industry efficient continuous vacuum filtration is a must. To do a good job, on a continuous basis, several different types of filtration equipment must be used.

All these different types of filters are built by Eimco: String Discharge, Precoat and Washing Type Filters. Starch men know the value of Eimco engineered, designed and Eimco built equipment.

It costs so little more to be sure the equipment is right. Let Eimco engineers consult with you on your filtration problems — no obligation.

EIMCO

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11 Broadway, New York 4, N. Y.

When inquiring check CP 6810 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

depends upon number of nozzles. In operation, steam from sparger pipe discharges at high velocity through tip of nozzle. Jet action draws liquid through open area on each side into nozzle chamber. Steam and liquid are mixed in chamber and discharged at sufficient force to cause constant agitation and provide quick heating while operating.

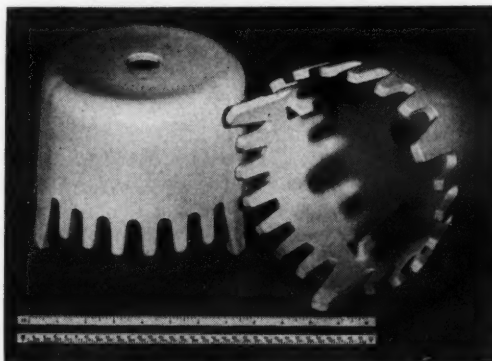
With steam consumption at 183 lb/hr and pressure at 40 psig, one nozzle in a 100 gal tank will circulate 20 gpm of water. Operating in this manner, temp of tank liquid will be raised 40°F in 11 min.

(Manufactured by Schutte and Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. . . . or for more information check CP 6811 on handy form, pages 2 and 3.)

Mechanical damage resisted by high strength ceramic bubble caps . . .

for use in distillation towers where corrosion may limit life of metal caps

Recently developed manufacturing techniques have made it possible to produce high strength ceramic bubble caps. High tensile properties and hardness of caps make them resistant to mechanical damage and abrasive conditions. Product is intended for use in fractionating and distillation towers where severe corrosion limits service of metal caps.



High alumina ceramic bubble caps withstood loads up to 24,000 pounds in factory tests

High Strength Bubble Caps are being produced in large quantity and a variety of designs. They can be made of several special ceramic materials, depending upon service conditions and design of cap.

Bubble caps in illustration were made of Coors Type AB-2 High Alumina Ceramic. This material has a tensile strength of 18,000 to 20,000 psi and a compressive strength in excess of 200,000 psi. These caps are 8 3/4" OD by 7" high, with a 3/8" wall. In factory tests, a cap was supported on the three legs and loaded vertically in a hydraulic press. Failure did not occur until load reached 24,000 lb.

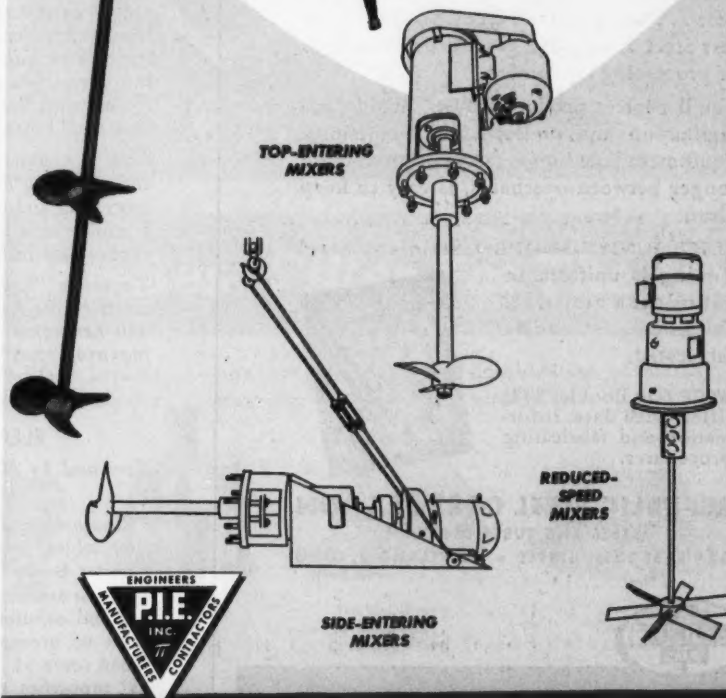
(Specific applications of bubble caps may be obtained from Landes, Zachary, and Peterson, 2500 West 7th Ave., Denver 4, Colo., sales representatives for manufacturer, Coors Porcelain Co. . . . or for more information check CP 6812 on handy form, pages 2 and 3.)

PIE-FLEX

PORTABLE MIXERS AND AGITATORS

- ADAPTABLE • FLEXIBLE
- PERFECTLY BALANCED
- STREAMLINED • PORTABLE

Here is extraordinary lightness and real portability in a portable mixer! Motor is coupled to propeller shaft by a flexible drive shaft. Motor can be mounted in any convenient location, in the adjoining room, if necessary, in case of inflammable or explosive materials. Write today for full details.



PROCESS INDUSTRIES ENGINEERS, Inc.

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Branch Offices: Cleveland, Buffalo, Rochester

When inquiring check CP 6813 on handy form, pgs. 2-3

CUT PER-YEAR COSTS

WITH ELECTRUNITE ENDURO

Stainless Steel Tubing

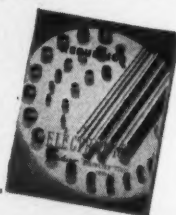


Get more years of service at lower annual cost . . . use ELECTRUNITE ENDURO Stainless Steel Tubing for practically every type of processing equipment.

You'll protect product quality, avoid contamination and undesired side-reactions. Equipment lasts longer, stays in production longer between overhauls, is easy to keep clean.

ELECTRUNITE ENDURO Stainless Steel Tubing is uniform in roundness and wall thickness, is readily fabricated.

WRITE FOR Booklet STP, filled with data, information and fabricating procedures.



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ELECTRUNITE

STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 6814 on handy form, pgs. 2-3



Recent Books



LEAD in MODERN INDUSTRY

Reviewed by D. J. Doan, Research Metallurgist
The Eagle-Picher Co.
East Chicago, Indiana

"Lead in Modern Industry" was compiled and written by the Technical Staff of the Lead Industries Association and contains 230 pages. The volume was written to fill a gap in the reference field on the general subject of lead. Much published information has already been summarized in book form on the productive metallurgy of lead, but this has become very limited and out-dated as to the technical applications and properties of lead. This book has been compiled to complete the overall data in this regard, leaving the history and primary production in a minor role.

After the introductory chapters, the book contains a brief section on fabricating lead metal into pipe, sheet and castings which gives a good picture of what can be done with the metal. Following this, 19 chapters take up the various uses for metallic lead and compounds of lead and contain many excellent illustrations. Last 3 chapters deal with the physical properties and constants of lead and its compounds. No attempt has been made to provide references for the data or information in the text. This omission, however, can be overlooked since use of book is not particularly for research reference and inclusion would have increased the complexities unduly.

Book is especially recommended to factory managers and operating engineers who are using lead in their processing and to those who are not now using lead. It will enable them to obtain a picture of possible applications in the future.

To obtain "Lead in Modern Industry" remit \$1.50 direct to the Lead Industries Association, Dept. CP, 420 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6815 on handy form, pgs. 2-3.

ELECTROCHEMICAL DATA

Reviewed by Malcolm Dole, Professor of Chemistry
Northwestern University

"Electrochemical Data", a book of 374 pages and 269 tables, was written by B. E. Conway of the Chester Beatty Research Institute, London. It contains an amazing amount of useful data for the electro and solution chemist, beginning with the usual table of universal constants and conversion factors. Then come 31 tables covering general data on physical properties such as ionic radii, refractive indices, vapor pressures, dielectric constants and dipole moments.

Longest chapter in the book, Chapter III, on electrolytes, contains 59 tables of much valuable information on activity and osmotic coefficients, salting out constants, apparent and partial molal heat contents, surface tension and viscosity of mixtures. Surpris-

ingly enough no data are given for the viscosity of electrolytes containing only one solute. Chapter IV, containing 43 tables, includes data for transport phenomena, diffusion and sedimentation constants, ionic mobilities and equivalent conductance. Ionization constants and the pH of buffer solutions are taken up in Chapter V. Then comes a short chapter on electric double layer phenomena, then a longer one on electrochemical properties of colloids, on the valence and mobility of proteins, for example.

A chapter on the electrochemistry of melts at high temperatures should be of particular interest and value to the industrial electrochemist. After a chapter devoted to standard electrode potentials, polarographic half wave potentials and redox potentials, the book is concluded with an interesting group of 22 tables on the parameters of electrode kinetics. These tables include values for over voltage, exchange currents, Tafel equation constants, heats of activation for electrode reactions and the stoichiometric number of the reactions.

To obtain "Electrochemical Data" remit \$8.75 direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring specify CP 6816 on handy form, pgs 2 and 3.

CORROSION TESTING PROCEDURES

Reviewed by R. I. Lindberg, Corrosion Engineer
Sinclair Research Laboratories, Inc.
Harvey, Ill.

"Corrosion Testing Methods" by F. A. Chapman is an excellent book and will be of special interest to those actively engaged in corrosion testing for whom it will serve as a thorough source book of laboratory information. Extensive bibliographies follow each of the twelve chapters and will prove of major assistance to anyone seeking particular details of corrosion research.

Because of the extreme variety of corrosion tests the author divides the book into five main stages: 1) the choice and preparation of metal and corrosive; 2) exposure of the metal to the environment in laboratory, field or service tests; 3) cleaning of the specimens preparatory to examination; 4) examination of the specimens or the corrosive for the effects of corrosion, other measurements which indicate the tendency to corrode rather than the effects of corrosion, and special tests are considered separately; 5) the expression and interpretation of results, with particular reference to the form of the corrosion-time curve.

The introduction contains a general discussion of corrosion test purposes and requirements which are then covered in detail in subsequent chapters. Each variable affecting corrosion is considered and methods of minimizing or accenting its effect are discussed to the end that the investigator can determine com-

binations of factors most suitable to his own needs. Discussions are clear and lucid and the practical aspects are emphasized throughout.

Final chapter on expression and interpretation of results will be of special value to laboratory men interested in clear, coherent presentation of their work.

Many detailed equipment diagrams are shown and author and subject indexes are included.

To obtain "Corrosion Testing Procedures" remit \$6.25 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, New York. When inquiring specify CP 6817 on handy form, pages 2 and 3.

KINGZETT'S CHEMICAL ENCYCLOPAEDIA

Reviewed by W. L. Faith

Director of Engineering, Chemical Division
Corn Products Refining Company

The Eighth Edition of this British Encyclopaedia runs to 1186 pages. It is edited by Dr. Ralph K. Strong of Rose Polytechnic Institute in collaboration with nine contributors, five of whom are Americans. Entries range from A-bomb to zymogen. Between these are roughly 5000 entries dealing with chemicals, alloys, drugs and pharmaceuticals, natural and synthetic products, plus related scientific and industrial terms. Some are one-line definitions (see Bay Salt); others are more inclusive, as indicated by the 14 pages devoted to "Nuclear Chemistry and Radioactivity" and five pages to "Energy". Definitions are generally descriptive, buttressed with historical background, application or use, physical constants, general chemistry, and source, when applicable. Probably the most noteworthy aspect is the list of pertinent references to other books and articles. Economic data are usually limited to 1937-1939.

Information on industrial processes is often misleading and sometimes incorrect; certainly disproportionate emphasis is given to obsolete or laboratory processes. A typical entry is:

"ADIPIC ACID ($C_6H_8(COOH)_2$)—A member of the oxalic series of acids, a constituent of beet juice, and produced by the action of nitric acid upon oleic acid and other fatty acids or on cyclohexanone, which is the source for nylon. It is a solid crystalline body soluble in alcohol, ether, and hot water, of m.p. 152°C. It is stated to be superior to tartaric acid for use in making baking powder, salines, and fruit essences. Used also in the manufacture of plasticizers and nylon. (See Nylon.)"

British forms of spelling are used, and many references are given to British trade names. As would be expected in a one-volume encyclopedia, every item of interest to an individual cannot be included. Two such omissions are pentaerythritol and zein. Nevertheless, the book will be useful to those desiring ready references to the chemical field, particularly where current industrial aspects of the subject are not paramount.

To obtain "Kingzett's Chemical Encyclopaedia" remit \$16 direct to D. Van Nostrand Co., Inc., Dept. CP, 250 Fourth Ave., New York, N. Y. When inquiring specify CP 6818 on handy form, pages 2 and 3.

Whatever You Want To Filter

If your material is similar in characteristics to any of these, it can be filtered successfully and economically by a Bird Filter.

Aluminum Hydrate
Ammonium Alum
Ammonium Chloride
Ammonium Nitrate
Ammonium Sulphate
Aniline Sludge
Barium Carbonate
Barium Chloride
Barium Sulphate
Beryllium Sulphate
Black Ash
Borax
Calcium Carbonate
Carnallite
Chromium Oxide
Coal, bituminous & anthracite
Copper Sulphate
Copperas

Cryolite
Di-Sodium Phosphate
Ethyl Cellulose
Fish Meal
Flotation Concentrates
Flotation Tails
Foundry Sands
Gland Extracts
Glauber's Salt
Glutamic Acid
Hexachlorethane
Hexamine
Iron Ore
Iron Oxide
Langbeinite
Lead Arsenate
Lead Chromate
Lime
Lime Mud

Lithopone
Manganese Ore
Nickel Salts
Packing House Waste
Phenol
Phosphate
(High Grade Residue)
Potassium Carbonate
Potassium Chloride
Potassium Hydroxide
Potassium Nitrate
Potassium Sulphate
Potato Starch
Sodium Bichromate
Sodium Carbonate
Sodium Chloride
Sodium Fluoride
Sodium Hydroxide
Sodium Nitrate

Sodium Stannate
Sodium Sulphate
Sodium Sulphite
Sodium Thio sulphate
Solvent Extractions
Starches
Sulfur
Synthetic Resins
Tallow
Tartaric Acid
Tin Ore
Titanium Dioxide
Tri-Sodium Phosphate
Tungsten Salts
Ultramarine Pigment
White Lead
Zinc Chromate
Zinc Oxide
Zinc Sulphide

Get The Filtration Facts First

The Bird Research and Development Center has the staff and the facilities to make pilot scale tests

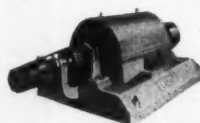
and give you performance facts and figures in advance of your equipment investment.



Then Get The One Best Filter For The Job

Bird builds all these types of solids — liquids separating equipment — will recommend only the

one that assures the best combination of filtering, washing, capacity and economy.



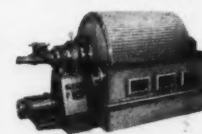
The BIRD
Continuous
Solid Bowl
Centrifugal Filter



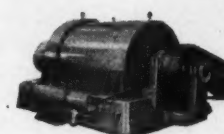
The BIRD
Screen
Centrifugal Filter



The BIRD
Suspended
Centrifugal



The BIRD-Young
Continuous
Vacuum Filter

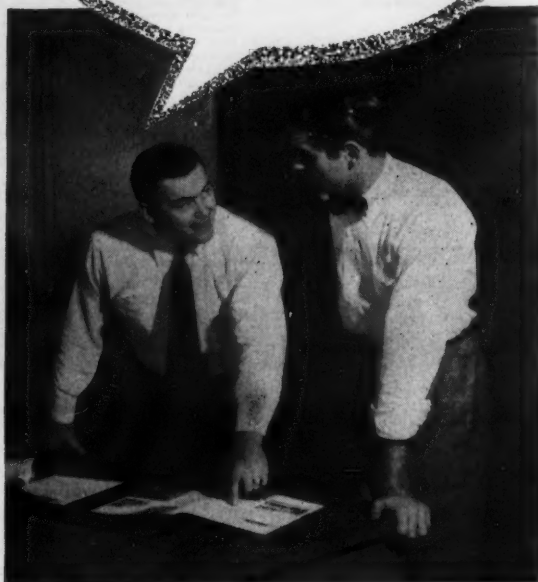


The BIRD
Centrifugal
Classifier

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

When inquiring check CP 6819 on handy form, pgs. 2-3

LET'S LOOK INTO
THIS NEW **ALCOA**
ALUMINUM
COILED TUBE!



If you're looking for the lowest cost, corrosion-resistant tube you can buy, it's called Alcoa UTILITUBE*. (Up to 40% less than other corrosion-resistant metals.)

If you want a tube that stands up well under vibration and also forms and flares easily, that's Alcoa UTILITUBE.

If you have many jobs for coiled tube, see what Alcoa UTILITUBE can do: fuel oil and gasoline lines—instrumentation lines—brake and hydraulic lines—refrigerants (except methyl chloride)—oil and grease lines.

UTILITUBE and fittings are available from your aluminum distributor. Look for his name in your classified telephone directory. Write for a copy of the new booklet, *ALCOA UTILITUBE*.

ALUMINUM COMPANY OF AMERICA
837-M Gulf Bldg. • Pittsburgh 19, Pennsylvania



*Construction &
Maintenance*

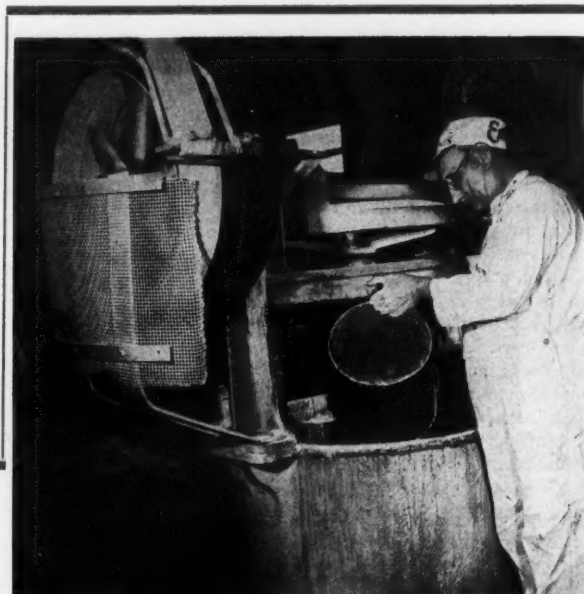
Eliminate Mixer Breakdowns at Enterprise Paint Mfg. Co. with Speed Reducers

Heavier paste handled and power saved with units, only maintenance in 1½ years being lubrication

PROBLEM: At the Enterprise Paint Mfg. Company in Chicago, a number of 90 gal mixers and one 450 gal vessel were powered by belt-drives and line shafting. Usual set-up was for one large motor to handle several mixers. At times belt would break and have to be replaced. Heavy paste could not always be handled, nor vessels filled to capacity without overloading motor and causing it to kick out. Frequent maintenance was necessary.

Fig 1—Paint mixer, 90 gal capacity, powered by undependable and uneconomical belt-drive

Fig 2—Speed reducer, which offers satisfactory performance with low maintenance and power requirements, operates this 90 gal mixer. Note torque-arm extending from lower portion of reducer to plate level with top of mixer



Whenever repairs were made to drive, all of mixers in a battery were out of production. On the other hand, large motor had to be run continuously as long as any single mixer was in operation. Power was also lost when belts stretched and became loose on pulleys.

Some 90 gal mixers were operated by a chain drive furnishing insufficient power for the operation. With this arrangement, one drive handled two mixers. Stiff paste could not be mixed in both vessels at once and when a breakdown occurred, both were delayed.

Solution: No. 4 Dodge Torque-Arm Speed Reducers were installed on each of

eight 90 gal mixers. On one 450 gal mixer, a No. 15 reducer was installed, using same 10 hp motor formerly employed with belt-drive. This large steam jacketed vessel, which handles a heavier paste than other mixers, was also equipped with a double agitator. One agitator rotates clockwise and the other counter-clockwise, with one shaft revolving inside the other.

Speed reducer is mounted directly on shaft instead of in conventional manner. This eliminates use of flexible coupling, belt take-up, and foundation for reducer. Unit is locked in place by collars on each side of reducer itself. Double reduction unit is usually employed for output speeds below 110 rpm. For speeds from 110 to 330 rpm, a single reduction unit is used.

Torque-arm anchors reducer and provides quick and easy adjustment of V-belts through use of a turn-buckle. Wide choice of constant speeds is available by use of different size sheaves in V-belt drive. Reducer is compact, light-weight, and easy to install.

Results: Breakdowns have been eliminated on mixers being operated with speed reducers. Heavier paste mixes can be handled. This is particularly noticeable on 450 gal mixer, which also can be filled with a greater volume of paste. Power is saved with individual drives since motors can be stopped when mixing cycles are finished.

Installation of speed reducers was initiated in Feb., 1951. Since that time practically no maintenance has been necessary on reducers except regular lubrication. (Torque-Arm Speed Reducers are manufactured by Dodge Mfg. Corp., Dept. CP, Mishawaka, Ind. . . . or for more information check CP 6821 on handy form, pages 2 and 3.)

Withstands up to 1800°F to prevent heat loss from furnace . . .

firebricks may be sawed without breaking and resist cracking caused by impact

Uses: Designed primarily for service as back-up insulation for refractory brick in range up to 1800°F. When not subjected to mechanical abrasion or exposed to molten slag or metal, it can be used as facing brick within above temperature range.

Features: The micaceous mineral Vermiculite is said to be the key ingredient which provides brick's highly efficient insulating characteristics.

Description: Physical properties of firebricks are:

Density	35 lb/cu ft
Weight per brick	2.1 lb
Thermal Conductivity	1.25 @ 700°F mean
Cold Crushing Strength	185 psi
Liner shrinkage after	
Modulus of Rupture	145 lb/sq in
reheating to 1600°F	0.1%
Linear shrinkage after	
reheating to 1800°F	2.0%

Bricks are made of Vermiculite and clay binders and in standard nine inch series. Low thermal conductivity will prevent excess heat loss in constant or intermittent furnace operations. They are packed in cartons of 25 each.

(Product of Zonolite Company, Dept. CP, Travelers' Rest, S.C. . . . or for more information check CP 6822 on handy form, pages 2 and 3.)

Wagner
ELECTRIC MOTORS
... the choice of leaders
in industry



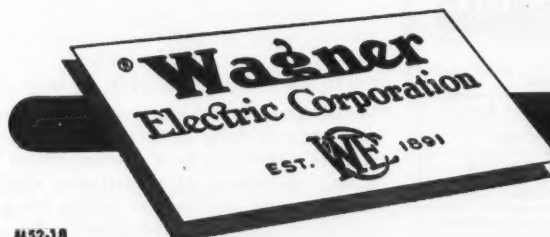
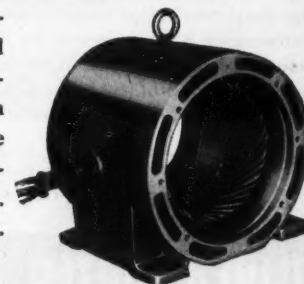
Wagner
Cast Iron Frame
MOTORS

**Totally-enclosed
Fan-cooled**

Built for use in corrosive atmospheres

Wagner Cast Iron Frame Motors are designed to provide the corrosion resistance demanded by applications in chemical plants or in other applications where protection against corrosion is required. They feature completely protected laminations . . . special varnish treated windings . . . a cast iron, gasket-sealed conduit box . . . a running shaft seal . . . and are totally-enclosed and fan-cooled for complete protection against acids and alkalis present in the atmosphere in the form of dust, fumes or moisture. The photo at right illustrates the rugged, one piece cast iron frame, showing openings for ventilation.

Where additional protection against explosive atmospheres is desired, an explosion-proof design (type JP) is available. Both the standard (type EP) and the explosion-proof types are built in ratings from 2 to 250 hp., with either normal or high torque characteristics. Non-ventilated 1 and 1½ hp. motors also available. Wagner Bulletin MU-132 gives complete information on these corrosion-resistant motors. Write for your copy today.



WAGNER ELECTRIC CORPORATION
6359 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS - AIR AND HYDRAULIC

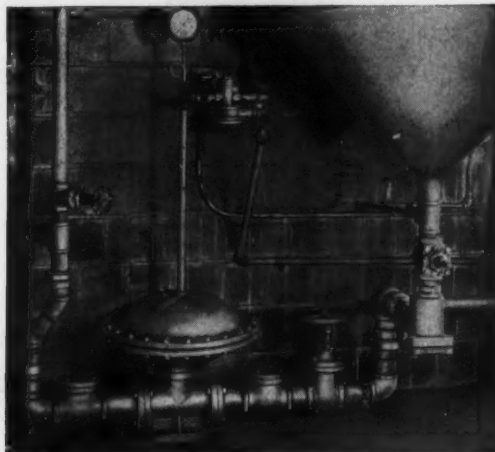
BRANCHES IN 32 PRINCIPAL CITIES

M52-10

When inquiring check CP 6823 on handy form, pgs. 2-3

ODS — Diaphragm — SLURRY PUMP

link-free simplicity... a low maintenance feature!



There's nothing novel about a diaphragm being used to transmit a pumping impulse to stream of slurry or liquid. Up to that point the O.D.S. is similar to all other diaphragm slurry pumps.

But where the O.D.S. Pump does differ is in the way the diaphragm gets its impulse. In the O.D.S. this is created pneumatically — not mechanically. There is no link connecting the diaphragm with the source of power. There is no hole in the center of the diaphragm because there is no need for it. And further there are no slots or holes around the perimeter of the diaphragm where it is clamped between the cover and casing.

This combination of 'no mechanical link to the diaphragm' and 'no slots or holes in the diaphragm' makes the O.D.S. just about the simplest diaphragm slurry pump you can find anywhere. You can readily appreciate what these two design features mean in the way of low maintenance. Since maintenance is an important factor in pumps, why not get all the details about the O.D.S. Pump? In writing for our Bulletin 309-R, tell us about your pumping problem. You see, we also have the Olivite Centrifugal Chemical Pump. It might be better for your requirement.

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When inquiring check CP 6824 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

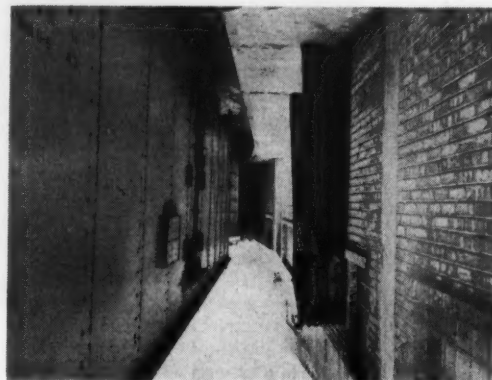
Accordion-type dock shelters expand to shield loading doors of any size...

protect against extremes of weather; increase speed of loading and unloading operations

Uses: Designed to protect men and materials during loading and unloading of trucks and railroad freight cars.

Features: Units extend outward on collapsible steel framework to protect loading doors of any size, yet collapse flush against building when they are not in use.

Description: Atlas loading dock shelters are available in several standard models which can be adapted to fit any unusual condition of use. By



Typical installation of canvas dock shelter. Unit in foreground is collapsed against building while in background shelter is extended outward on steel framework to protect freight car loading door

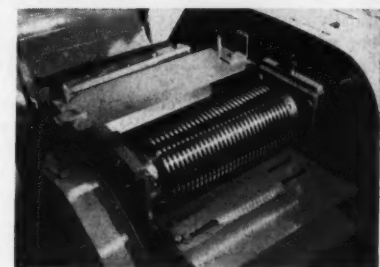
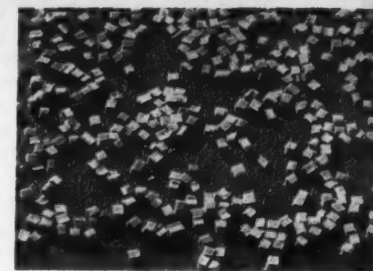
protecting men and materials against all extremes of weather, units increase labor efficiency in loading and unloading operations. Since they keep dock-boards dry, they safely speed operations.

(Dock shelters are products of Atlas Products Co., Dept. CP, 1300 W. Washington Blvd., Chicago 7, Ill. . . . or for more information check CP 6825 on handy form, pages 2 and 3.)

Solid skirted V-port plugs minimize whistle in gas or steam lines...

substantially reduce tendency of plug to spin. Construction of a solid skirted type of V-port valve plug has resulted in three primary gains: 1) reduction and possibly elimination of high pitched noise on gas or steam service, 2) substantial reduction of plug's tendency to spin, and 3) improved stability of plug at high loads.

While the physical requirements for producing spin are not fully understood, it is presumed that spin is produced by a vortex action in the fluid acting on those plug surfaces which are in a plane normal to the axis of the plug. The more surface so disposed, the greater the torque. The more ports to the skirt, the more torque de-



PELLETIZE

RUBBER OR PLASTIC STOCK —

in preparing it for extrusion or molding, with—

TAYLOR-STILES DICING CUTTER

In a single operation, this efficient machine takes sheets of stock and cuts them twice—1) with rotary cutters that slice the sheets into strips—2) the knives of a revolving knife head cut into small cubes of uniform size.



SEND FOR
FREE COPY
OF
FOLDER

App. 202

which describes Taylor-Stiles precision and large production cutters used for cutting both rubber and plastic stocks.

TAYLOR-STILES
Company
CUTTING MACHINES & KNIVES

20 Bridge Street

Riegelsville,

New Jersey

When inquiring check CP 6826 on handy form, pgs. 2-3

CHEMICAL PROCESSING

for men concerned with **COLOR**

Pigment Costs Reduced 60% by Maker of Leather Finishes

A pure Indian Red was causing trouble for a company making leather finishes.

The company came to us stating that it was obtaining a wide range of color effects.

Our analysis of this company's formula revealed that the pigment was uniform . . . but it was too highly concentrated in relation to the amount of vehicle being used. As a result, there was insufficient vehicle in the final film to completely coat the pigment and fill the voids between the pigment particles. This gave an optical effect of darkening.

To cure this situation, we developed a new formula which called for a 60% reduction in the amount of Indian Red. Enough pigment still remained to give complete hiding . . . and the drastic reduction enabled the company to obtain the uniformity of color it was seeking.



LET WILLIAMS PUT THE MICROSCOPE ON YOUR COLOR PROBLEM

Whatever your color problem, bring it to us . . . chances are we'll save you time and money on proper color formulation.

For complete technical reports, address Dept.
28, C. K. Williams & Co.,
Easton, Pa.

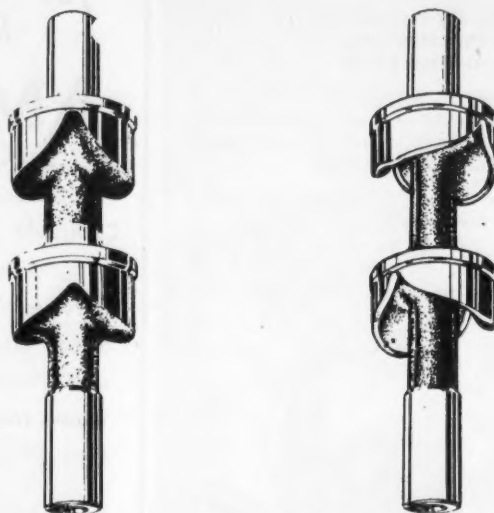
WILLIAMS COLORS & PIGMENTS

C. K. WILLIAMS & CO.
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108 METALLIC OXIDE PIGMENTS FOR
COLORS . . . CATALYSTS . . . POLISHING
AGENTS . . . MAGNETIC MATERIALS

When inquiring check CP 6827
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE



Comparative design of solid skirted non-symmetrical V-port plug (left) and hollow type plug

veloped. The non-symmetrical V-port, with solid skirt design, gives a port shape which has no surface perpendicular to the axis of plug. Even the single port brought up to the seat slopes away rapidly and offers minimum surface on which the fluid can get a "bite."

The V-porting is arranged in a series of four steps which combine to give equivalent of four symmetrical V's. The solid V-port (left in photo) shows the one port in upper skirt reaching the seat and shallower of two ports in lower skirt.

Manufacturer's tests show average torque developed on four principal plug types. All plugs were 2" in size and tested in standard double seated valve body using water and pressure drop of 150 psi.

Plug Type	Max Developed Torque (in lb)
Quick opening wing guided	130
Straight sided V-port (4 ports/skirt)	75
Hollow skirted, equal percentage V-port (2 ports/skirt)	30
Solid non-symmetrical, equal percentage V-port	too light to measure quantitatively

Although test results are rough because of unstable and cyclical nature of the force, they do indicate relative spin tendency of several types. Further tests confirm fact that solid skirted non-symmetrical V-port develops very small rotary force. Manufacturer reports that, although this V-port is not a cure-all, it does extend the field of application of top and bottom guided double seated valves.

(Product of Mason-Neilan Regulator Co., Dept. CP, 1190 Adams St., Boston 24, Mass. . . or for more information check CP 6828 on handy form, pages 2 and 3.)

OLIVITE Acid-Handling PUMP

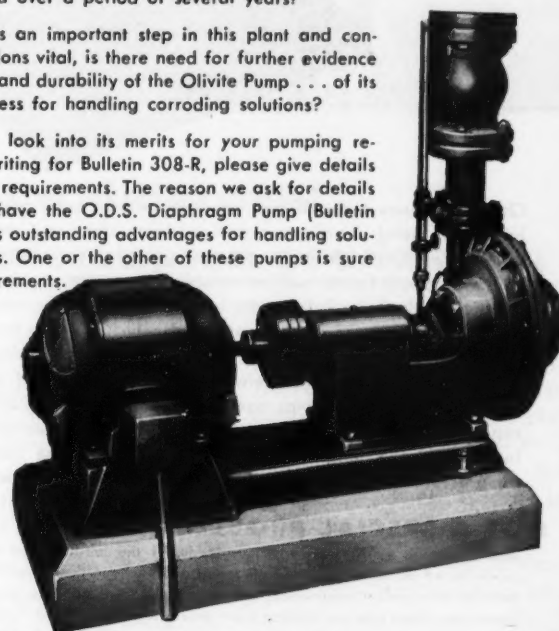
Approved to the Extent
of Over 100 Pumps in One Plant

HERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid-Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



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When inquiring check CP 6829 on handy form, pgs. 2-3

PROBLEM:

PUMPING CORROSIVE CHEMICALS?

POSITIVE, AUTOMATICALLY-REGULATED FEED?

CONTAMINATION?

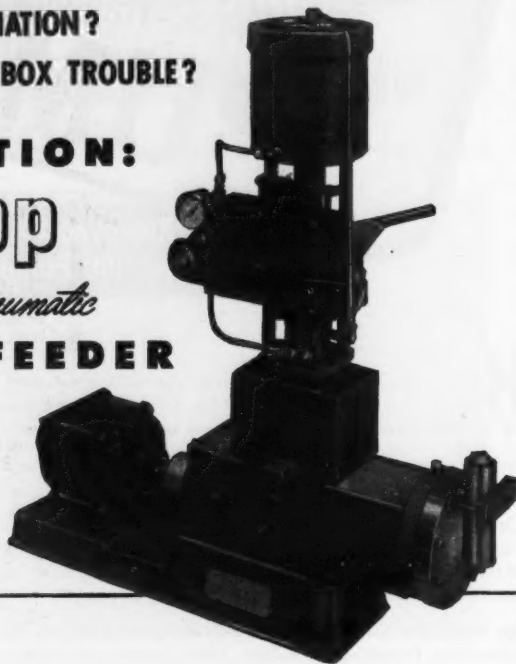
STUFFING BOX TROUBLE?

SOLUTION:

Lapp

Auto-Pneumatic

PULSAFEEDER



Chemicals successfully being handled include gum and sludge inhibitors, metal deactivators, anti-oxidants, dyes and stabilizers. Also those for boiler water or processing water treatment—concentrated sulphuric acid, sodium sulphite, filter aid slurries, liquid caustic. For the Lapp Pulsafeeder is the positive-displacement pump for controlled-volume pumping of liquids which depends on no stuffing box or running seal—avoids contamination by an hydraulically-balanced diaphragm which isolates pumping mechanism from chemical being handled. Pumps against pressures up to 2,000 lbs., at constant pumping speed—variable flow results from variation only in piston-stroke length. Auto-Pneumatic control uses instrument air pressure responding to any instrument-measurable variable.

GOT A SPECIAL PROBLEM? Every month we hear about applications to which the Lapp Pulsafeeder is the long-awaited answer. A newly-issued bulletin, No. 300, will tell you about our pump and its characteristics, with typical applications and flow charts. A Pulsafeeder Inquiry Data Sheet, on which you can outline your processing requirement, will bring an engineering recommendation. Write us today. Lapp Insulator Co., Inc., Process Equipment Division, 566 Maple Street, Le Roy, N. Y.

Lapp

Auto-Pneumatic

PULSAFEEDER

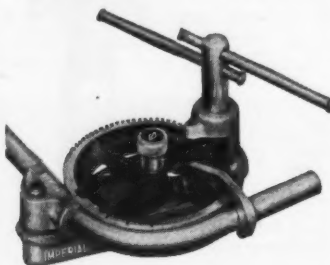
When inquiring check CP 6830 on handy form, pgs. 2-3

CONSTRUCTION

**Any type of tubing
is smoothly bent
by compact unit**

Uses: For bending tubing for refrigeration, air conditioning, plumbing, heating, instrument lines, and other uses.

Features: Rugged construction of unit enables it to bend any type of tubing, including hard drawn copper, hard temper steel, heavy wall steel, stainless steel, aluminum,



Tube bender is easy to operate

and brass. Bending action produces smooth, even bends, without kinks or flat areas. Unit is quite compact.

Description: No. 270-F Universal Gear-type Tube Bender is constructed so that it can be positioned on tube at any point where a bend is desired. This allows bends to be made when one end of tubing is connected. It can be used to make right or left hand bends, return bends, offset bends, and right angle bends.

High gear ratio facilitates operation, which is a special advantage when working with hard temper or large size tubing. Bender is designed so that it can be held by hand, clamped in a vise, or bolted to a bench. Extension handle can be obtained which permits use of bender in a pipe vise.

Separate bender is used for each size of tubing. Units are available for tubing from $\frac{3}{8}$ to $1\frac{1}{2}$ " OD.

(Manufactured by The Imperial Brass Mfg. Co., Dept. CP, 1200 W. Harrison St., Chicago 7, Ill. . . . or for more information check CP 6831 on handy form, pages 2 and 3.)

Processing & Engineering Data
on pages 176, 178, 180, & 182

**YOU GET
REAL SERVICE
WITH**

AMESTEAM GENERATOR

**Before Installing . . . A
Complete Manual on "How To Do It"**

**After Installing . . . Our LOCAL
Service Man
Starts Unit
and Provides
Three Months
Free Service**

**10 to 500 h.p.
15# to 200# w.p.
OIL or GAS**

AMES IRON WORKS INCORPORATED

**BOX D-12 OSWEGO, N.Y.
Builders of Better Boilers Since 1848**

When inquiring check CP 6832 on handy form, pgs. 2-3

HARPER

**Specialist in all
Non-Corrosive Fastenings!**

Call Harper first! America's largest producer of non-ferrous and stainless steel fastenings—specializing in bolts, screws, nuts, rivets, washers and accessories in brass, bronze, copper, aluminum, Monel, stainless steel—to solve your problems in corrosion, heat, abrasion and stress. Over 7,000 items stocked by warehouses and distributors from coast to coast.

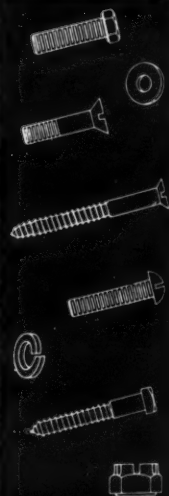


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Price List and
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EVERLASTING FASTENINGS

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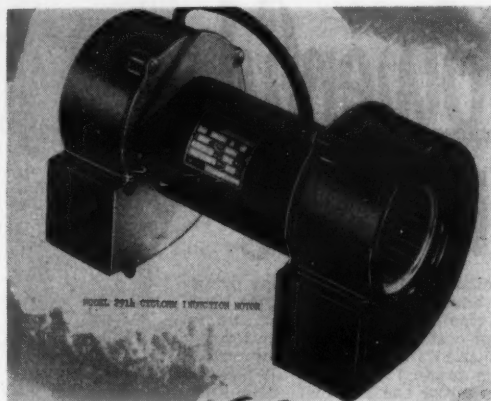
When inquiring check CP 6833 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Fractional hp blowers
for cooling electronic
equipment . . .**

ambient temperature range is from -65° to $+70^{\circ}$ Centigrade

Cooling electronic equipment and micro-wave relay equipment are two specific uses of fractional hp motor blowers. Model 100 DC motor is rated 1/50 hp at 27 1/2 v. It operates at 4500 rpm at sea level, 6500 rpm at 50,000 feet with relatively constant air delivery of 40 cfm. Ambient temperature range is -65° to $+70^{\circ}$ C.



Air delivery of double blower is 37 cfm each head at 95 v AC

Model 2914 is Cyclohm induction motor rated from 1/100 to 1/15 hp. Motor operates at 1650 rpm with input voltage of 90 to 120 v. It is self-ventilated and available with ball or sleeve bearings. Air delivery of double blower is 37 cfm each head at 95 v AC.

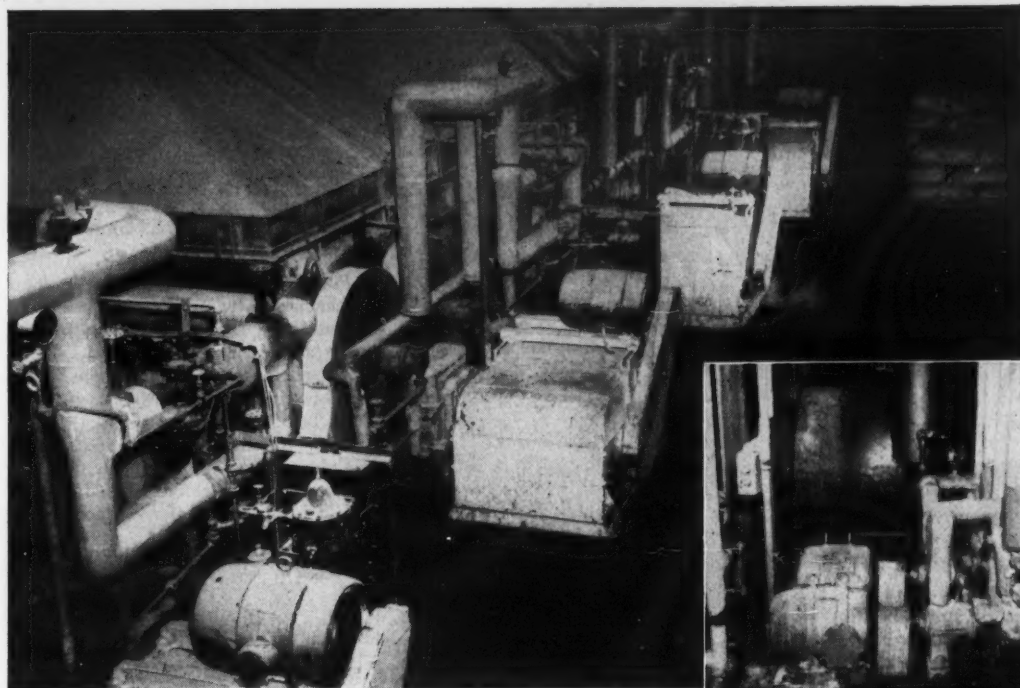
(Product of Howard Industries, Inc., Department CP, 1760 State Street, Racine, Wisconsin . . . or for more information check CP 6834 on handy form, pages 2 and 3.)

**Plastic replacement for service
where elastomeric O-rings
are unsatisfactory**

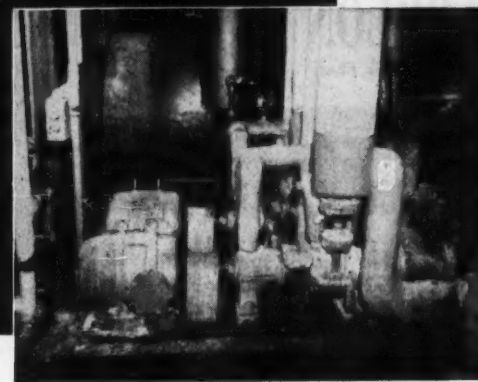
Heat resistance, chemical inertness, and low coefficient of friction are three properties which characterize Kelon-T (Teflon), Kelon-F (Kel-F, Fluorothene), Nylon, and Polyethylene O-rings. They are intended for special sealing applications where elastomeric (rubber) O-ring compounds are unsatisfactory. Specific use of O-rings would be in hydraulic, chemical, petroleum, pump, and valve installations.

Kelon series is unaffected by oils, acids, bases, or solvents and is serviceable within temperature range from minus 110 to plus 500°F. Variety of sizes are available on request.

(Product of W. S. Shamban & Co., Dept. CP, 5747 Marilyn Ave., Culver City, Calif. . . . or for more information check CP 6835 on handy form, pages 2 and 3.)



(Above) Kreeleon dryers with 5-H.P. Howell Motors at Wyandotte Chemicals Corp. (Right) 2-H.P. Howell explosion-proof motors drive tar pumps.



High demand for new detergent calls for uninterrupted production

Howell Motors on the job in Wyandotte's new Kreeleon plant

The Wyandotte Chemicals Corporation's new synthetic detergent and wetting agent, Kreeleon*, has become so widely accepted that steady production is absolutely essential to meet the demand.

Throughout the new Kreeleon

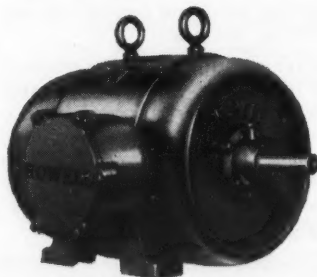
plant, special machines of many types are in operation constantly. And as is often the case in chemical plants, the production of these machines is kept on schedule by the dependable power of Howell Motors.

Shown above are Kreeleon dryers driven by 5-H.P. totally-enclosed, fan-cooled Howell Motors. In the same plant, explosion-proof motors in various sizes drive kerylbenzene, tar and caustic pumps.

Many other manufacturers in the chemical and allied fields, too,

prefer Howell Motors. They like Howell's superior design, precision construction and low maintenance. They like the way these motors stand up and deliver unfailing power under tough conditions.

If your motor operations demand this performance, ask the Howell representative in your city to give you the facts on standard and special motors. Sizes from 1/6 to 250 H.P.; types for every application. You'll get immediate help by calling today or by writing direct to the factory. * Reg. U.S. Pat. Off., Wyandotte Chemicals Corp.



Howell explosion-proof motor for hazardous locations.



HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICHIGAN
Precision-built industrial motors since 1915

When inquiring check CP 6836 on handy form, pgs. 2-3

TOUGH JOB FILTER CLOTHS

New Available

ORLON*

(An acrylic fiber)

Good resistance to hot mineral acids, weak alkalis, common solvents, oils, greases, neutral salts, acid salts and chlorine.

No loss of strength after 32 days exposure to air at 257°F. Negligible shrinkage.

VINYON N**

Excellent resistance to strong acids such as sulphuric, nitric, hydrochloric, hydrofluoric and aqua regia. Also to sodium and potassium hydroxide; chlorine and bromine water, silver nitrate, tannic acid and many oils, fats and waxes.

Boiling solutions are readily withstood by these versatile media.

SARAN

Exceptional resistance to acids, particularly hydrochloric, and to alkalis except ammonium hydroxide. Unaffected by alcohols or aliphatic hydrocarbons. Continuous exposure up to 160°F. and intermittent exposure up to 212°F. do not appreciably affect tensile strength.

GLASS

Woven from highly resistant, durable chemical glass. Usable where such synthetic itself is usable.

These cloths are available in several weaves and in standard widths ranging from 26" through 72" or made up into filter element covers. These cloths are all woven in our own mill by operators having long experience in the art of glass fabric weaving.

*TM—E. I. Du Pont de Nemours & Co., Inc.

**TM—UCC



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When inquiring check CP 6837 on handy form, pgs. 2-3

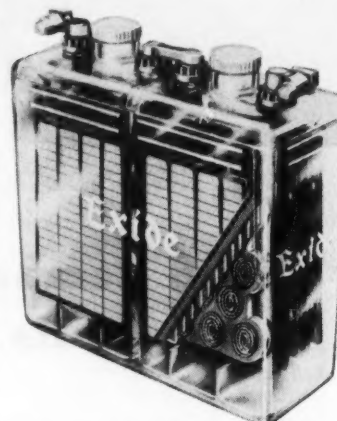
CONSTRUCTION

Special alloy grids add life to storage battery . . .

colored balls show charge through transparent case

Uses: For small power requirements in laboratories, communications, electronics, etc.

Features: The grid used in the manchester-type Plate positive plate is an alloy which resists forming action of electric current. Alloy resists mechanical strains and holds its shape without growth or buckling. Colored pilot balls show instantly the state of charge. Colored lines on transparent container indicate recommended upper and lower levels of the electrolyte.



Transparent case allows quick check

Description: Containers and covers of Type CME storage batteries — in two and three-cell units — are molded from clear, heat-resistant polystyrene to reduce shock and stress damage and for lighter weight.

Active material in the manchester positive plate is lead peroxide, formed by electrochemical action on surface of the soft lead rosettes, or buttons, which are pressed into the holes in the grid.

Heavy negative plates are constructed to combine low internal resistance and highly sustained balance with the manchester positive plates. Double insulation between positive and negative plates is provided by use of microporous rubber separators and slotted plastic sheets.

Both two and three-cell units have three capacities ranging from 8 to 24 amp-hr at the 8 hr rate. Width and height have been standardized in the two-cell, end-to-end assembly.

One of many reasons why skilled industrial maintenance workmen prefer

**AIRETOOL
TUBE CLEANERS**

**Powerful
motors**

Airetool high speed motors bring you exclusive advantages that help you clean every tube quicker, and at lower cost. For instance, the Power Seal and Balanced Rotor. These features make full use of all power, even under the heaviest loads, provide constant torque at every speed, without dead centers, and permits loading down without stalling to 50 rpm. Add to these, slip-fit construction of all motors for easy maintenance, and you'll understand why you get more power, speed and efficiency from Airetool tube cleaners. For the full story, write to: The Airetool Mfg. Co., 331 S. Center Street, Springfield, Ohio.

Airetool series "6000" ball bearing motor features front and rear ball bearing thrusts. Single expansion type of cutter head thoroughly cleans straight tubes.



**CLEANS OUT
HEAVIEST SCALE!**

This outside mounted cleaner removes all scale conditions from straight condenser tubes, 3/4" to 1 1/2" I.D., even when completely plugged. Weighs 21 pounds. Handle valve gives operator positive control. Air or steam driven. Gear driven models available.

CC450 DIRECT DRIVE
CONDENSER CLEANER

AIRETOOL
MANUFACTURING COMPANY

SPRINGFIELD, OHIO

There's An
Airetool
Tube Cleaner
and Tube
Expander For
Every Type
Of Tubular
Construction.

BRANCH OFFICES: New York • Chicago • Philadelphia
Tulsa • Houston • Baton Rouge • Hudson Heights (NY)
REPRESENTATIVES in principal cities in U.S.A., Canada,
Mexico, South America, England

When inquiring check CP 6838 on handy form, pgs. 2-3

CHEMICAL PROCESSING

blies at 8 and $8\frac{1}{2}$ " respectively. Corresponding dimensions in side-to-side assemblies, (both two and three-cell units) are standardized at $4\frac{1}{4} \times 8\frac{1}{2}$ ". Thus, these units can be combined to give any desired output within their range at any required voltage.

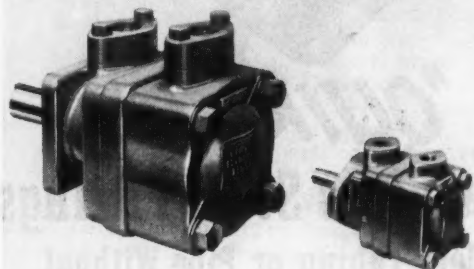
(Development of The Electric Storage Battery Co., Dept. CP, Box 8109, Philadelphia 1, Pa. . . . or for more information check CP 6839 on handy form, pages 2 & 3.)

**Automatically compensates
for axial and radial wear
in hydraulic motors . . .**

head port can be placed in any 1 of 4 positions relative to body port

Uses: As source of variable speed power, they can be used for continuous, intermittent, or continuously reversing service.

Features: Balanced vane type motors have "rocking beam" construction to keep all vanes in intimate contact with cam ring at all times and yet avoid



Models M-500 (left) and M-200 balanced vane type hydraulic motors

fatigue failures common to spring-type vane actuators. Mounting adaptability is provided by choice of four combinations of inlet and outlet port positions.

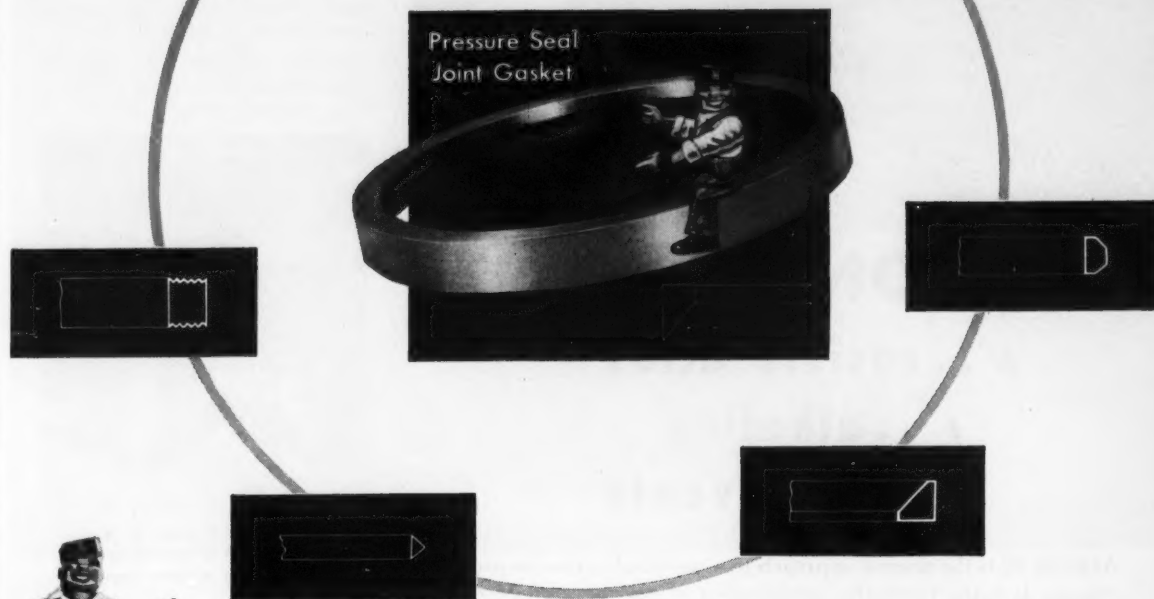
Description: Models M-200 and M-500 balanced vane type motors have horsepower ratings of 5.0, 6.5, and 26. Shaft, rotor, and vanes are constructed of heat treated alloy steel. Two inlet ports are diametrically opposite each other as are two outlet ports. This construction is intended to eliminate bearing loads resulting from pressure.

Axial and radial wear are automatically compensated for at all times. A shuttle valve introduces fluid pressure from inlet port to space behind pressure plate to maintain optimum axial running clearances throughout complete pressure range. When radial wear occurs, vanes revolve in slightly larger orbit.

The head port can be placed in any one of four positions relative to body port by simply unbolting and rotating the head. Motors can be furnished with either flange or foot mounting. Drive may be directly coupled or connected through belt, chain, or gear drive.

(Product of Vickers Inc., Div. of The Sperry Corp., Dept. CP, 1400 Oakman Blvd., Detroit 32, Mich. . . . or for more information check CP 6840 on handy form, pages 2 and 3.)

You'll save time and trouble on H.P. VESSEL GASKETS



**...when J-M Goetze gasket specialists
make them for you**

When you need gaskets such as those above, which were made for pressure vessel service over 5000 psi, consider this. It takes less time and trouble to turn the job over to J-M Goetze—an organization that has specialized in gasket design and manufacture for 67 years. And it usually costs less in the long run.

Goetze engineers can select the right style for maximum sealing efficiency. They know the correct metals and other factors required for efficient, long-lasting gaskets.

Goetze Gaskets are made exactly to the last detail of your specifications and conditions. They are made to craftsmen's perfection . . . with modern machine tools, some of which were specially designed by Goetze for gasket manufacture.

If you need gaskets for high pressure vessels or similar applications, send us a drawing or template for quotation. Or write for further information to Johns-Manville, Box 60, New York 16, New York.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING
AND GASKET FOR EVERY SERVICE

When inquiring check CP 6841 on handy form, pgs. 2-3



THIS ONE CEMENT

✓...resists acids

✓...alkalies

✓...solvents

ALKOR 5E is the nearest approach to a universal corrosion-proof cement. It is the particular combination of resistance characteristics that makes ALKOR 5E of tremendous importance to industry.

It is important for you to know that your acid-proof construction will not be destroyed by alkalies or solvents in any phase of your processing operations. It is also important that you can standardize on this one cement, proven to withstand and protect against such a wide range of corrosives.



ALKOR 5E is a resin cement based on a furfuryl alcohol polymer. In addition to resistance to all non-oxidizing acids, alkalies and solvents; it also resists fats, oils and greases; and may be used for temperatures up to 380° F. ALKOR 5E has no offensive odor; and its low shrinkage assures joints that are level with the brick or tile surface.

NEW Bulletin 5-2... send for your copy today.

RECOMMENDATIONS for your specific requirements may be obtained without obligation from the ATLAS Technical Service. In recommending both materials and constructions for handling corrosives, there is no substitute for 60 years of ATLAS experience.

ATLAS PRODUCTS STAND
... between your process
and corrosion



Corrosion-proof: Cements—Coatings—Vessel Linings

When inquiring check CP 6842 on handy form, pgs. 2-3

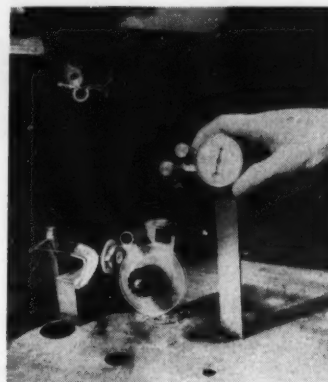
CONSTRUCTION

Hysteresis brake uses magnet instead of friction...

maintains constant tension on yarn, wire, etc

Uses: For tension control in processing synthetic and natural yarns as well as rubber, glass-fibre, small diameter wire, and similar thread or string material.

Features: Brake uses magnetic drag instead of friction to maintain tension, which results in



Tension brake is shown in photograph while it is controlling yarn tension during winding operation

minimum of abrasion of yarn on pulley. Inertia of brake is slight enough to prevent unthreading during acceleration and deceleration of the brake.

Description: Hysteresis brake consists of Alnico magnets designed and mounted so that magnetic drag (hysteresis effect) offers restraining force on pulley. Force is essentially constant at all speeds and can be adjusted simply by turning calibrated head mounted above pulley.

Restraining force of magnets minimizes abrasion to wire since material is always in contact with revolving pulley and is not rubbed against or drawn over the surface of the pulley.

Brake reverses direction of rotation a few degrees after stopping, thereby holding stalled tension. Construction of brake permits operational speeds up to 700 yards per minute while tension control ranges from 3.5 to 10.5 grams.

(Product of General Electric Company, Dept. CP, Schenectady 5, New York... or for more information check CP 6843 on handy form, pages 2 and 3.)



NEW!

"QUIKUPL"® Stainless Steel Fittings Join Tubing or Pipe Without Threading, Flaring or Welding

"QUIKUPL" — a completely new stainless steel fitting — makes possible the assembling of tubing and pipe lines without threading, flaring, sweat-soldering, brazing or welding. Tubing or pipe is simply cut to length, deburred, and inserted into the fitting — tightening a small screw then completes the coupling.

Resilient sealing ring in "Quikupl" maintains squeeze fit... pressure in line causes positive seal between fitting and tube or pipe. Sealing ring is nontoxic to foods, and resistant to most chemicals. Couplings, tees, adapters and elbows (45° and 90°) are available from Frasse warehouse stock in Types 304 and 316 stainless steel—sizes for tube and pipe range from 1" to 4" O. D. For complete details on "Quikupl" stainless steel fittings write for Engineering Memo #7.

*Reg. U. S. Pat. Off

Peter A. FRASSE and Co., Inc.

17 Grand Street, New York 13, New York
Lyndhurst Philadelphia Buffalo Syracuse

When inquiring check CP 6844 on handy form, pgs. 2-3

CHEMICAL PROCESSING

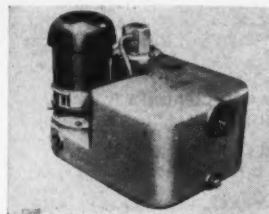
**Quiet automatic operation
obtained in condensate
return pumps . . .**

compact, vertical turbine-type units are for use with heating systems

Uses: Units are available in capacity range suitable for handling condensate for heating systems with ratings from 800 to 10,000 EDR (effective direct radiation) and pressures up to 50 psi.

Features: Since completely automatic pumps are close-coupled, with no shaft bearings to wear and become noisy, quiet operation is assured. Vibration is minimized by mounting on resilient synthetic rubber. Compactness with maximum capacity is achieved by means of a rectangular receiver.

Description: Apco-Matic condensate return units, both Simplex and Duplex, are of vertical turbine-type pump design. Construction of pump and motor minimizes loss of heat. Pumping unit is bronze in order to avoid corrosion and insure long life.



Compact condensate return unit

Low return opening is convenient for connection to return lines close to floor, yet assures ample suction head for efficient operation. Dual discharge openings provide optional connection for piping to boiler. Mechanical seal eliminates leakage.

Replacement of worn parts or complete unit can be made easily without the necessity of disturbing piping connections.

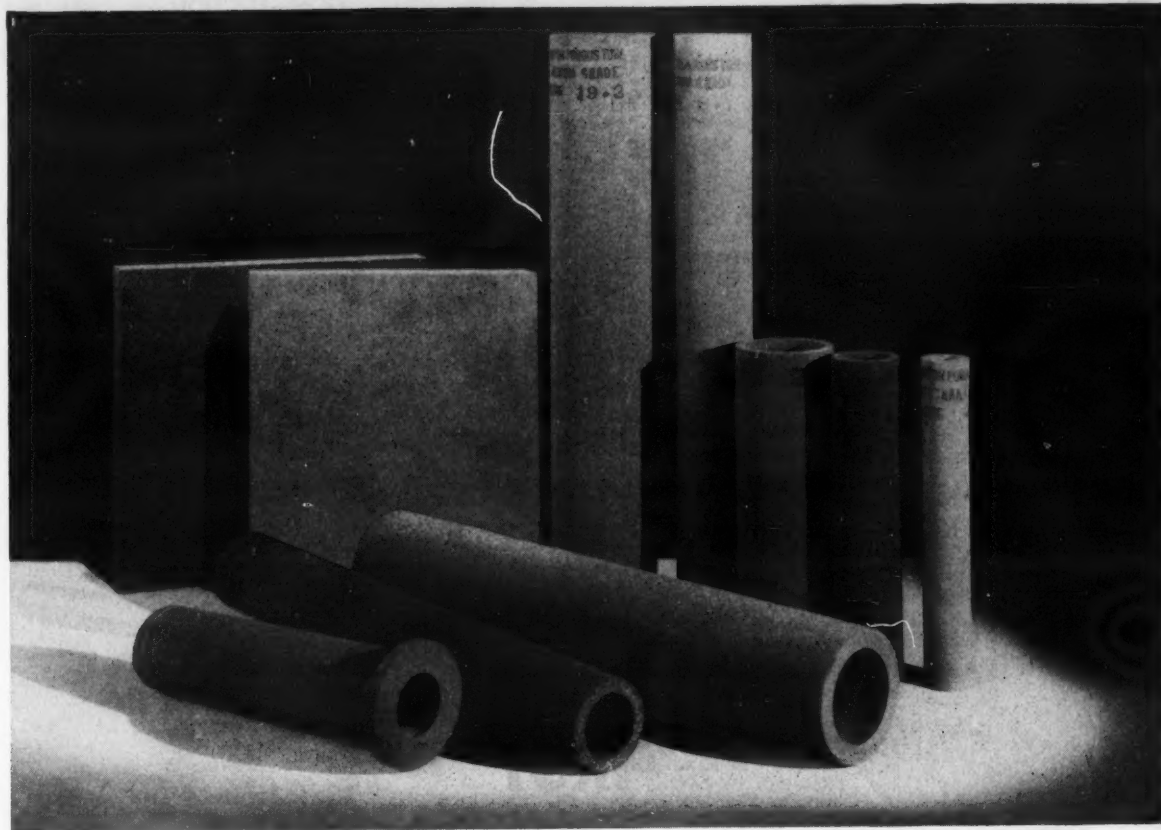
(Manufactured by Aurora Pump Co., Dept. CP, 62 Loucks St., Aurora, Ill. . . or for more information check CP 6845 on handy form, pages 2 and 3.)

**Lists uses, gives features, specs
of engine-driven compressors**

Uses, features, specifications of manufacturer's Model HMA Gas-Engine-Driven compressors (4 models) of 2, 4, 6, and with BHP's of 80, 165, 250, and 330 respectively, and 8 cylinders each are given in 48-page, illustrated bulletin. Advantages of individual models for specific applications are discussed as well as general features of all models.

Manufacturer reports construction of this model meets all requirements for semi-portable field compressors: 1) ruggedness, 2) perfect balance, 3) compactness, and 4) simple design. Other features of the Midget Angle model include: 1) matched components, 2) flexible design, 3) economical installation, 4) two-cycle simplicity, 5) high compression, 6) precision construction, and 7) minimum foundation.

Bul 124 is issued by Clark Bros. Co., Dept. CP, Div. of Dresser Operations, Inc., Olean, N. Y. When inquiring specify CP 6846 on handy form, pages 2 and 3.



**For greater filtration efficiency,
easier cleaning operation . . .**
Norton ALUNDUM* Seamless Tubes

Increase the efficiency of your filtration system with Norton porous seamless tubes. Made of long lasting ALUNDUM grain, their seamless construction assures more uniform filtration and faster, more thorough cleaning by backwashing.

Used in systems filtering water, solvents, cutting oils, wine, food oils, and other liquids . . . in reclaiming cleaning fluids, industrial waste . . . in swimming pool filtration, and boiler feed water treatment.

Norton porous mediums, in both tube and plate forms, bring you chemical stability unaffected by most corrosive acids, strength that assures maximum resistance to breakage and chipping . . . controlled structure (an exclusive Norton process) that permits positive

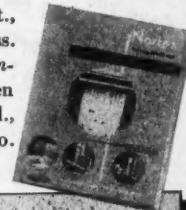
control over grain spacing and predetermined pore size and open pore ratio to meet your requirements.

Send for Bulletin No. 140

Plan now to get complete data on these Norton refractory products by obtaining Norton Bulletin No. 140:

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

"Norton Porous Mediums." Ask your Norton representative for a copy or write us direct. NORTON COMPANY, 571 New Bond St., Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.





POROUS MEDIUMS

Making better products to make other products better

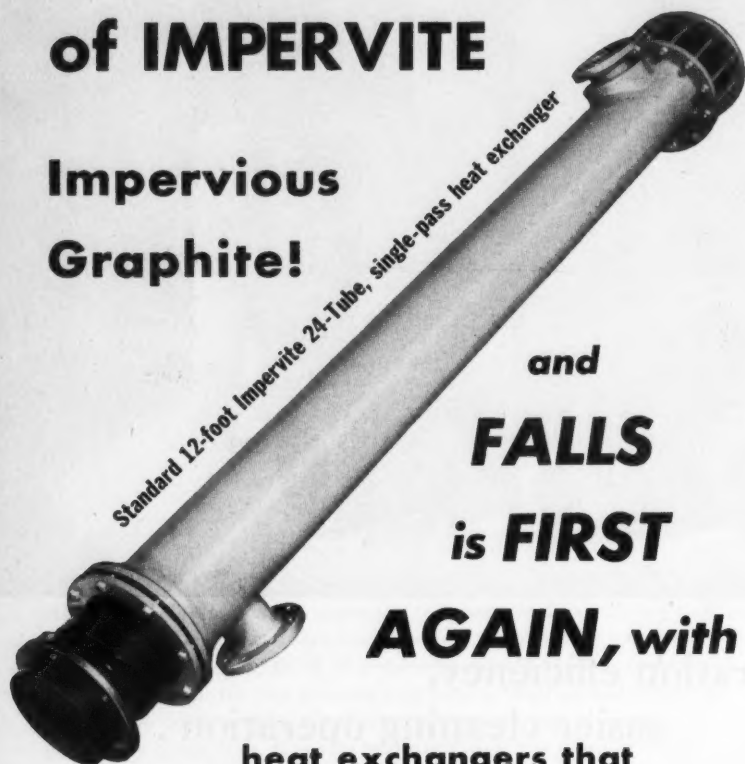
NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

When inquiring check CP 6847 on handy form, pgs. 2-3

NOW!

12-FOOT TUBES of IMPERVITE

Impervious
Graphite!



and
FALLS
is **FIRST**
AGAIN, with

heat exchangers that
give you 33⅓% more surface
for ONLY 15% added cost!

Have you received
your copy of the
complete Impervite
Catalog?

BECAUSE Falls Impervite (Impervious Graphite) pipe is made in our own associate plant, and BECAUSE this modern plant was carefully planned with the future of the processing industry in mind, and BECAUSE since production started last year its engineers have perfected their development of super-length graphite extrusions . . .

THEREFORE, this company takes considerable pride in being the first to supply a long-felt need in this industry . . . 12-foot Impervite (impervious graphite) tubes, making possible the production of heat exchangers having obvious advantages over the former maximum standard lengths.

Falls Industries, Inc.

AURORA ROAD - SOLON, OHIO

When inquiring check CP 6848 on handy form, pgs. 2-3

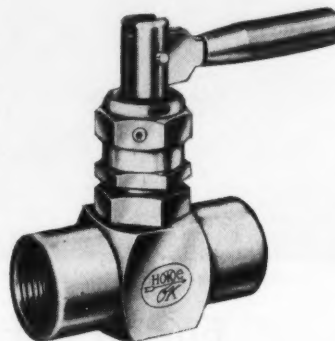
CONSTRUCTION

**Allows use of toggle valve
at 1000 psi**

Uses: For controlling pressure or high vacuum systems. When ordered specially assembled and tested, valves may be used for high vacuum service if minute in-leakage across stem seal when stem is in motion is of no consequence.

Features: Will operate at pressures to 1000 psi, accomplished by special design of closing action of valve seat by a hardened steel cam, rather than by a spring as in small-toggle valves.

Description: Essentially the same as manufacturer's smaller toggle valves, these large size valves are currently made in only ½" NPT



Toggle valve will operate at pressures to 1000 psi

female size. Stem is sealed by synthetic rubber "O" ring; valve seat is made of semi-hard plastic material. Cap nut on toggle valve is adjustable so that when cam handle is perpendicular to the stem, valve seat is closed.

Set screw in cap nut locks and positions yoke so that cam will swing in any desired plane perpendicular to the bottom face of the valve body.

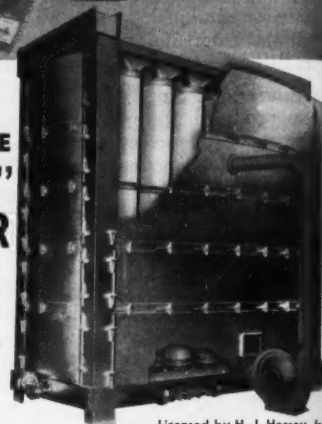
Valve can be made tight to a helium leak detector test at seat, gasket bonnet to body joint, and "O" ring stem seal when the stem is not in motion. Total in-leakage past the the moving "O" ring stem seal during the length of time required to open or close the valve will not exceed 0.01 microliter, manufacturer reports.

(Valve is a development of Hoke, Incorporated, Dept. CP, 145 S. Dean Street, Englewood, New Jersey . . . or for more information check CP 6849 on handy form, pages 2 and 3.)



TELLS HOW THE DAY "AC" DUST FILTER

WILL FIT INTO
YOUR OPERATION
MORE EFFICIENTLY
AND ECONOMICALLY



Licensed by H. J. Hersey, Jr.

- ✓ CONTINUOUS-AUTOMATIC CLEANING WITH NEVER A SHUTDOWN FOR SHAKING OR RAPPING
- ✓ FILTERING EFFICIENCIES UP TO 99.998% ON FINEST SUB-MICRON DUST PARTICLES
- ✓ MORE ECONOMY IN SPACE, INSTALLATION AND MAINTENANCE COSTS. RECOVERS VALUABLE PRODUCT

We've checked only three of the outstanding advantages you get in a DAY "AC" Dust Filter . . . there are many more especially desirable for handling dust peculiar to the Chemical Industry. That's why we've compiled Bulletin No. 528 which will give you all the facts and figures on the operation of this highly efficient Dust Filter showing why it is so applicable to your industry. The bulletin also shows how DAY engineers can help you toward the solution of any chemical dust problem.

We want you to have the complete story, and a request on your letterhead will bring it to you. Simply ask for Bulletin No. 528 which contains complete, detailed information on DAY "AC" Dust Filters, a Dust Problem Analysis Sheet for your convenience in making a dust check in your plant, and information on other DAY air handling and air cleaning equipment.



WRITE
FOR
YOUR
FREE
COPY
TODAY!

The DAY Company
852 3rd Ave. N.E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 70, Ft. William, Ontario
Branch Plants in Ft. Worth, Buffalo and Welland, Ontario

When inquiring check CP 6850 on handy form, pgs. 2-3

CHEMICAL PROCESSING

All-aluminum stacking box carries 5000 lb load . . .

runners are formed like I-beam so fork trucks can carry, stack, or empty boxes

Uses: For handling or collecting finished products or scrap materials.

Features: Box, which will carry a 5000 lb load, is mounted on low runners so they may be lifted by fork trucks and transported, stacked, or turned over and emptied.

Description: All-aluminum box is made of welded 61S alloy sheet and extrusions. Welds are made by either inert gas shielded arc or the sigma process. Light weight is indicated by fact that it weighs 245 lb as contrasted to steel box which



Single aluminum box has dimensions of 60 x 42 x 36"

weighs 620 lb. Runner is formed like I-beam for added strength and tiering lugs simplify stacking. Stacking box resists corrosion and corrosive fumes as well as contamination by red rust stains.

(Aluminum box was designed by Aluminum Company of America, Dept. CP, Pittsburgh 19, Pa., and fabricated by Powell Pressed Steel Company, Hubbard, Ohio. . . or for more information check CP 6851 on handy form, pages 2 and 3.)

Description, applications of centrifugal pumps

Nine different types of centrifugal pumps are described and illustrated in four-page bulletin. Specifications and applications are included for each unit. Pumps are especially designed for abusive industrial use.

Bul 952 is issued by Nagel Pumps, Inc., Dept. CP, Chicago Heights, Ill. When inquiring specify CP 6852 on handy form, pages 2 and 3.

"MUST" Reading

for Plant Engineers

Table of contents		page
PREVENTIVE METALLURGY TO MAINTAIN TUBE HEALTH	The life span of a condenser tube depends upon the water and operating conditions and the alloy selected.	3
PROTECTIVE FILMS ARREST CORROSION	Life expectancy is prolonged if protective films form soon after service begins.	6
REVERE MINUTE MEN IN CONDENSER TUBE WAR	"Trouble shooters" serve as liaison between tube users and Revere Research Laboratory.	10
DEVELOPMENT WORK IN TUBE ALLOYS	Experiment in Revere laboratories develops basic knowledge of tube performance under variable conditions.	11

• We doubt very much if you have ever read a booklet on Condenser Tubes, quite like this one.

Plant engineers should find it of unusual interest in these times when it is more important than ever that every last ounce of use be squeezed out of the condenser tubes in their plants.

This 28-page booklet includes data on various copper alloys, photos of cut-away tube sections showing various types of corrosion encountered in condenser tube service and photomicrographs showing the grain structure of different kinds of metals under varying operating conditions.

Send for your copy today. Please make request on your firm's letterhead. Thank you. Revere Copper and Brass Incorporated, 230 Park Avenue, N. Y. 17, N. Y.

Life extension for condenser tubes

AND BRASS INCORPORATED

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

When inquiring check CP 6853 on handy form, pgs. 2-3

Now available a new improved plastic diaphragm...



"L-2" diaphragms offer new high standards of performance in many severe services

For a wide variety of severe services, including the valving of 66° Bé sulfuric acid, the new, improved "L-2" diaphragm offers physical and service characteristics never before available. Like its predecessor, the "L-1", the "L-2" diaphragm is made of polyethylene specially compounded to provide high resistance to strong acids and other highly active materials.

Hills-McCanna diaphragm valves with "L-2" diaphragms are available with a choice of manual, remote or automatic operators and with bodies of any machinable alloy or with rubber, Neoprene, glass or lead linings. Sizes range from 3/4" through 14". "L-2" diaphragms permit operation at temperatures to 125°F and pressures to 100 psi. Other diaphragms available are Kel-F, Neoprene, rubber, Hycar, Tygon, and butyl. Depending on material, these may be used at pressures to 150 psi, temperatures to 220°F.

Write for complete details. HILLS-McCANNA CO., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANNA

saunders patent diaphragm valves

Also Manufacturers of Proportioning Pumps

Force Feed Lubricators • Magnesium Alloy Castings

When inquiring check CP 6854 on handy form, pgs. 2-3

CONSTRUCTION

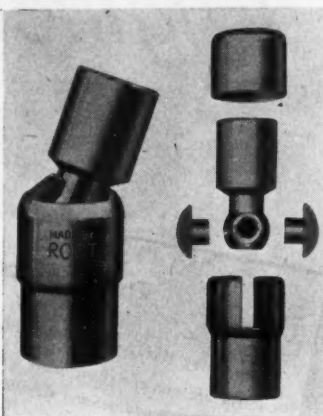
**Simplicity and durability
featured in universal
coupling...**

ball and socket joint operates
by toggle action

Uses: For all types of machinery requiring coupled shafts, either straight line or at an angle.

Features: Unit is simply constructed with a small number of working parts. Design of joint makes it strong and serviceable.

Description: Essentials of unit consist of ball fitting into socket with stress of power transmission absorbed by two oversize keys. Operation is by toggle action.



As shown, coupling has only a few parts

Entire assembly is held in place by rolled and crimped cap. Bearing surfaces are heat treated and machined to close tolerances.

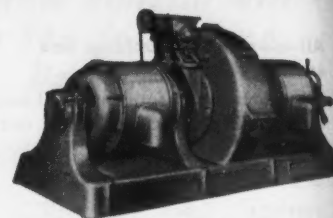
Reservoir in base of socket retains lubricant for slow feeding to points of wear. Absence of customary blocks and pins provides small unit in relation to size shaft it will turn. It has maximum deflection of 30° and is as strong as shaft it is bored to receive. It is particularly effective at medium and high speeds.

(Product of B. M. Root Co., Dept. CP, York, Pa. . . or for more information check CP 6855 on handy form, pages 2 and 3.)

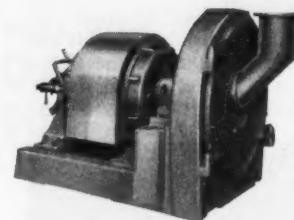
Calculation of
Equivalent Length of Fittings
a handy nomograph
on page 178

MOST COMPLETE LINE AVAILABLE

Bauer
**ATTRITION
MILLS**



Bauer Double Revolving Disc Attrition Mill. Two built-in motors or sheaves for belt drive. 30 to 600 hp.



Bauer Single Revolving Disc Attrition Mill. Built-in motor or pulley for belt drive. 2 to 450 hp.

Sizes: 8", 18", 24", 30", 40".
Used for grinding, granulating, decorticating, intensive mixing and blending.

Our sales engineers are qualified to design efficient cleaning, feeding, crushing, milling, and separating systems. They'll be glad to confer with you.

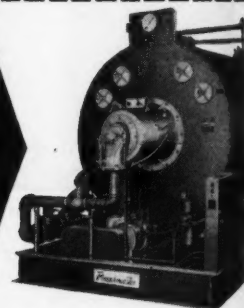
Ask for literature and data.

THE BAUER BROS. CO.

1728 SHERIDAN AVE. • SPRINGFIELD, OHIO

When inquiring check CP 6856 on handy form, pgs. 2-3

**ONLY THE
Powermaster
GIVES YOU
VORIFLOW®
COMBUSTION!**



Latest Development in Burner Design Saves Fuel and Man-Hours

1. Wide range modulation between high and low fire at full efficiency—you use less fuel.
2. Freedom from carbon cuts clean-up time and expense—usually by 50%.
3. Change from oil to gas (or gas to oil) in a few minutes.

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ORR & SEMBOWER, INC. • 960 Morgantown Road • Reading, Pa.
Please send my free copy of the POWERMASTER catalog.

NAME _____ TITLE _____
(Please Print)

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 6857 on handy form, pgs. 2-3

CHEMICAL PROCESSING

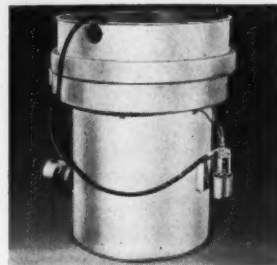
**Cleans small, medium parts
with capacity of up to
600 lb/hr of steel . . .**

interior of unit protected by non-porous coating;
is completely corrosion-proof, solvent-resistant

Uses: Designed to clean small and medium sized
parts. Suitable for shops, laboratories, and small
manufacturing plants.

Features: Simple installation — just connect water
supply and plug in the electric model or connect
a steam line to the steam-operated model.

Description: The Detrex VS Jr degreaser is
available in two standard, manually operated models,
one is electrically heated and the other operates by
steam. Parts are
suspended in pure
solvent vapor which
rapidly dissolves
soils or dirt and
grease. Spray of hot
solvent flushes away
any loose, stubborn
soils which might re-
main. Finally, a
rinse in pure solvent
vapor leaves work
clean and dry.



Compact degreaser gives ef-
ficient cleaning

In addition to being
only 48" from top
to base, unit offers additional convenience in that all
work may be placed in baskets or on racks or hooks
for quick and easy handling. Interior of unit is com-
pletely protected against action of solvents and cor-
rosion by non-porous coating.

(Dgreaser is product of Detrex Corp., Dept. CP,
Detroit 32, Mich. . . . or for more information
check CP 6858 on handy form, pages 2 and 3.)

**Permanent magnet holds
soft jaws of vise
in place . . .**

holds object securely and can be removed by
simply lifting them off

Uses: As gripping jaws in vises to hold objects
without marring or scratching delicate finishes or
highly polished metals.

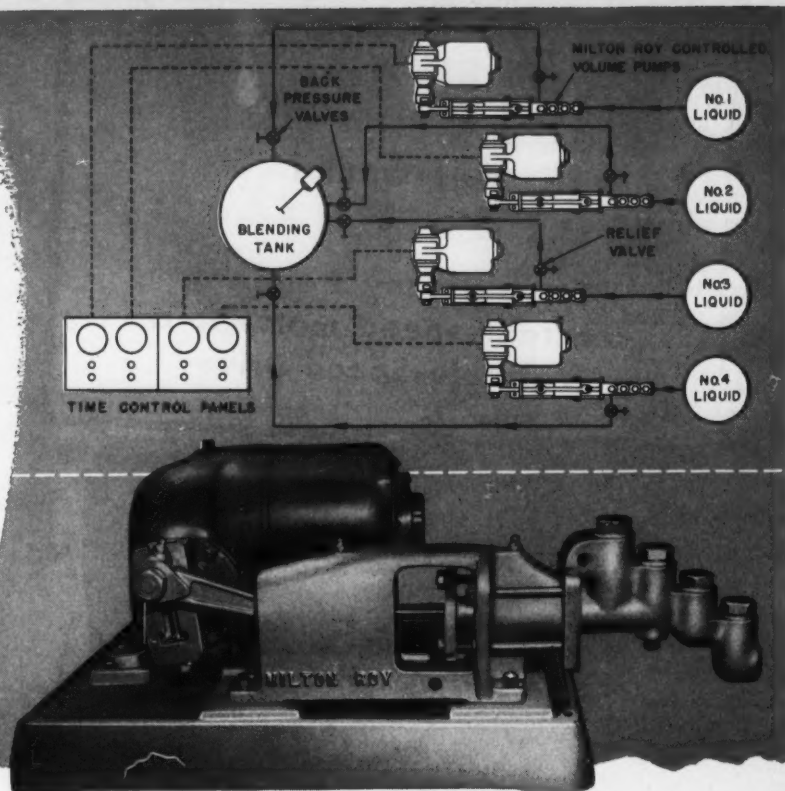
Features: By utilizing built-in permanent mag-
nets, the soft jaws are easily snapped into position
without using any devices to hold them in place.
They hold securely and can be removed by just
lifting them off.

Description: Soft jaws are made of light, durable
alloy with a two-way V-groove to lock object in place.
Jaws are reported to give extended service and may
be re-faced if necessary. They are available in widths
of 3, 3½, 4, 4½ inches and may be obtained with
square, round, hexagonal, or flat rectangular (ex-
tended surface) patterns.

(Product of Magne-Grip Tool Company, Dept. CP,
4900 W. Madison St., Chicago 44, Ill. . . . or for
more information check CP 6859 on handy form,
pages 2 and 3.)

**This is
Controlled
Volume Pumping**

Continuous blending of
four component wood
stain colors in pre-
determined quan-
tities to produce a
finished wood
stain precisely
color-consistent
in successive
batches.



THIS MILTON ROY AUTOMATIC BLENDING SYSTEM DOES THE JOB

At The Gilbert Spruance Company, well-known Philadelphia paint manufacturers, four of the Milton Roy Motor-Driven Controlled Volume Simplex Pumps illustrated are components of a Milton Roy blending system used to meter precise quantities of four primary wood stain colors in streams to a blending tank. The continuous controlled volume feeding results in uniform blending of the components; assures rigid consistency in color among successive batches of the blended product; eliminates occasional color variations and waste which would be encountered in blending by hand methods. Two of the pumps feed 63 gallons per

hour each of two colors; the other two 20 gallons per hour each of the other two colors. Pressures are 15 psi.

Continuous or intermittent Milton Roy formulation and control equipment of this type effects genuine economies applied wherever precision liquid component blending is encountered. Costly variations in formulae are eliminated by holding to an accurate delivery of a fraction of one per cent for most applications. As air-powered or motor-driven units, as components of automatic systems complete with a variety of automatic controls and accessory equipment, Milton Roy Controlled Volume

Pumps give an assured accuracy and uniformity of product often impossible to obtain by any other method. Necessary changes in formulae can be accomplished quickly and accurately by a variety of controls. Capacities range from 3 milliliters per hour to about 50 gallons per minute, against pressures to 25,000 pounds per square inch. Practically any liquid—slurries, suspensions of solids, viscous or corrosive chemicals, tars, sludges—can be handled with equal, precise, efficiency.

For detailed information, call the Milton Roy representative listed in your classified telephone directory. Or write us direct.

*Manufacturing
Engineers*



MILTON Roy COMPANY

1354 EAST MERMAID LANE, PHILADELPHIA 18, PA.

CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

When inquiring check CP 6860 on handy form, pgs. 2-3

REEVES

Vari-Speed Motor Pulley

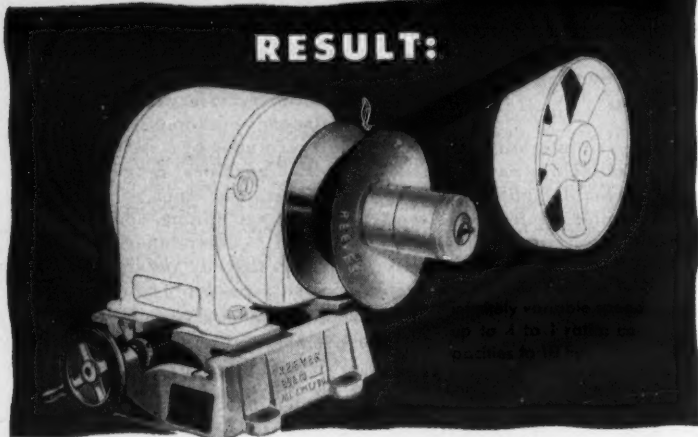
Converts any standard,
constant-speed motor to a
Variable-Speed Drive

REEVES Motor Base provides sliding platform for motor. Handwheel or push-button control increases machine speed by moving motor toward driven machine; decreases speed by reverse movement.

Disc assembly mounts directly on motor shaft. This simple assembly consists of two cone-shaped discs and belt-tensioning spring.

V-belt connects disc assembly with driven machine.

RESULT:



● REEVES Vari-Speed Motor Pulley is the easiest, lowest-cost method of giving a constant-speed machine stepless speed adjustability. Eliminates all complicated electrical hook-ups, chain drives, gears, etc. . . . widens machine work range, increases rate of production and reduces production cost by providing the right speed for each operation under every changing condition—without stopping the machine. Send for complete information to Dept. CP6a.

REEVES PULLEY COMPANY • COLUMBUS, INDIANA
Recognized leader in the specialized field of variable speed control
STEPLESS! ACCURATE! POSITIVE!

REEVES Variable Speed Drives

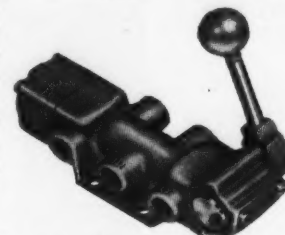
When inquiring check CP 6861 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Pneumatic or hydraulic lines are provided with 2-, 3-, or 4-way flow . . .

valve for 1/8 and 1/4 NPT lines may have hand, foot, pilot, or cam actuating devices

All internal parts of two-, three-, and four-way type pneumatic and hydraulic valves are interchangeable. They may be serviced or disassembled without disturbing pipe connections and with only one tool (screw-driver). "Anti-extrusion" arrangement of all kinetic O-ring seals is reported to contribute airtightness after more than three million cycles of operation. This factor is also reported to make it impossible to cut seal rings in normal operating pressure range from 0 to 200 psig.



Valve shown above has hand actuating device

Pneumatic and hydraulic valves for 1/8 and 1/4 NPT size lines may be actuated by hand, foot, pilot, or cam devices (with or without spring return). Actuating devices can be used singly or in combination to meet actuating requirements. Small actuating force required is relatively unaffected by line pressure since all valves incorporate balanced pressure spool design. All ports, including threaded exhaust ports, are plainly marked to facilitate installation.

(Product of Versa Products Co., Inc., Dept. CP, 249 Scholes St., Brooklyn, N. Y. . . . or for more information check CP 6862 on handy form, pages 2 and 3.)

Continuous operation for four hours at maximum load is provided by steam cleaner . . .

unit is capable of discharging 540 gph of spray and equal volume of rinse at same time

Uses: Unit is designed for use in any operation requiring large scale cleaning on a mass production basis. Constructed originally for use by Armed Services, cleaner is now available in industrial model.

Features: Steam cleaner will operate for four hours continuously at maximum load, and for many additional hours at lesser loads, without replenishment of detergent or fuel supplies. Machine is capable of discharging up to 540 gph of pressure detergent spray and an equivalent volume of hot or cold pressure rinse simultaneously. This is virtually double the cleaning capacity of standard steam cleaning equipment.

Description: BOE-600S Clayton Kerrick Steam Cleaner is equipped with 60 gal detergent concentrate tank and 40 gal fuel tank. Vapor generator operates with thermal efficiency in excess of 80% under all operating loads. Pressure atomizing burner system is equipped with safety switch control. Efficient operation is provided by kerosene, fuel oil,



Attention!

MANUFACTURERS OF:

**CAUSTIC
SODA
CHLORINE
HYDROGEN
OXYGEN!**

Investigate Bamag for fully automatic, pressure, bipolar type electrolytic cell. Bamag has supplied hundreds of installations all over the world for the last quarter century.

Check these features:

- 5m² floor space required,
- low power consumption,
- high gas purity,
- completely automatic operation,
- low operating costs,
- output flexibility,
- long life.

For reference lists and literature write to:

**GENERAL INDUSTRIAL
DEVELOPMENT CORP.**

270 PARK AVENUE,
NEW YORK, N. Y.

BAMAG-MEGUIN

AKTIENGESELLSCHAFT
270 PARK AVE. • NEW YORK 17, N. Y.

When inquiring check CP 6863 on handy form, pgs. 2-3

CHEMICAL PROCESSING

distillates, or gasoline. Economy in utilizing detergent is assured by accurate metering device.

Unit has withstood severe tests for durability, both in engineering laboratory and in long field service. Motor, pumps, and all working parts are built to hold up with minimum of maintenance. Control



High capacity, heavy-duty steam cleaner

handles, pressure gages, and inlet and outlet connections are easily accessible. Two hinged hoods provide quick access to working parts for minor adjustments.

Machine is supplied complete with specially insulated cleaning gun, rinse gun, two sets of delivery hose, and 150' of heavy duty electrical cable. Equipment operates on 220 volt, 60 cycle, single phase current. It is 48 inches high, 88 inches long, and 34 inches wide. Weight, with storage tanks empty, is 2000 pounds.

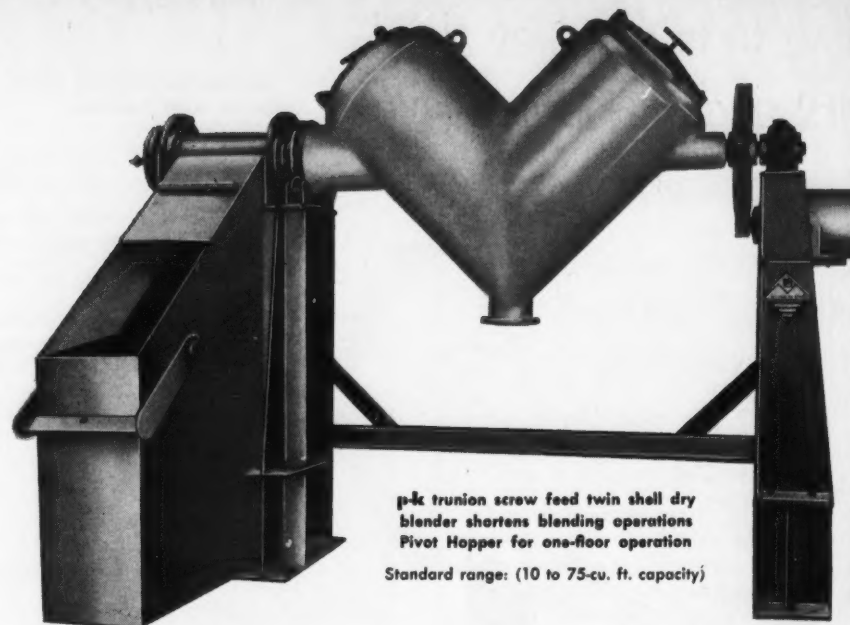
(Product of Clayton Mfg. Co., Dept. CP, El Monte, Calif. . . . or for more information check CP 6864 on handy form, pages 2 and 3.)

Easy to shift connections with ground clamp for arc welding . . .

Serrated lower jaw will remove rust and scale to assure clean connection

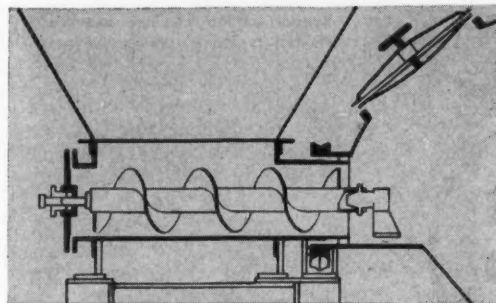
Model GC-200 Cub Ground Clamp for arc welding makes it possible to shift ground connection easily and quickly to reduce "arc blow," and shorten welding circuit for current economy. Serrated lower jaw removes rust and scale as clamp is applied and assures clean connection. Device has protruding upper lip for leverage in applying clamp. Its rated capacity is 200 amp.

(Product of Tweco Products Co., Dept. CP, Boston at Mosley, Wichita 1, Kansas. . . . or for more information check CP 6865 on handy form, pages 2 and 3.)



p-k trunion screw feed twin shell dry blender shortens blending operations
Pivot Hopper for one-floor operation
Standard range: (10 to 75-cu. ft. capacity)

Now! Dry blending is even faster



p-k trunion screw feed fixed hopper
for conveyor or through-floor operation
Standard range: (10 to 150-cu. ft. capacity)

The new **p-k** trunion-feed, twin shell dry blender is faster because: Hopper can be loaded while blending is in progress permitting semi-continuous operation which speeds up the overall blending process. The blender is loaded directly from the hopper by a short, screw conveyor in a fraction of the time formerly required. All internal surfaces — shell, hopper and screw are quickly accessible for cleaning.

Gentle rolling-folding action assures rapid blending of powders, grains, pellets or flakes in any combination, thoroughly and without attrition.

Dust tight loading ports eliminate dusting which results in a clean operation. All interior surfaces are baffle-free and are easily reached for thorough cleaning.

When your process planning includes a blending operation, it will pay you to ask **p-k** for blending tests on your materials and for engineering assistance at the initial planning stage. Since **p-k** also makes double-cone and ribbon blenders, an unbiased analysis of your blending methods is assured. Or, write for factual literature—Catalog No. 12.

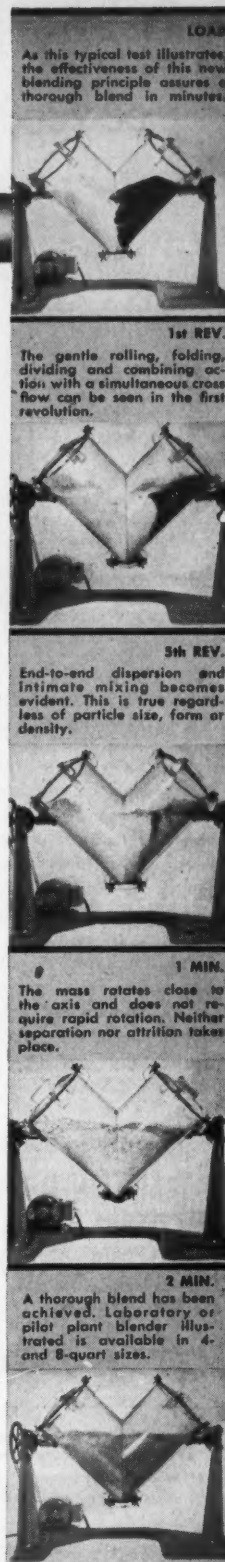
© 1901

the Patterson-Kelley Co., Inc.

820 Lackawanna Ave., East Stroudsburg, Penna.

101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 6866 on handy form, pgs. 2-3



LOAD
As this typical test illustrates, the effectiveness of this new blending principle assures a thorough blend in minutes.

1st REV.

The gentle rolling, folding, dividing and combining action with a simultaneous cross flow can be seen in the first revolution.

5th REV.

End-to-end dispersion and intimate mixing becomes evident. This is true regardless of particle size, form or density.

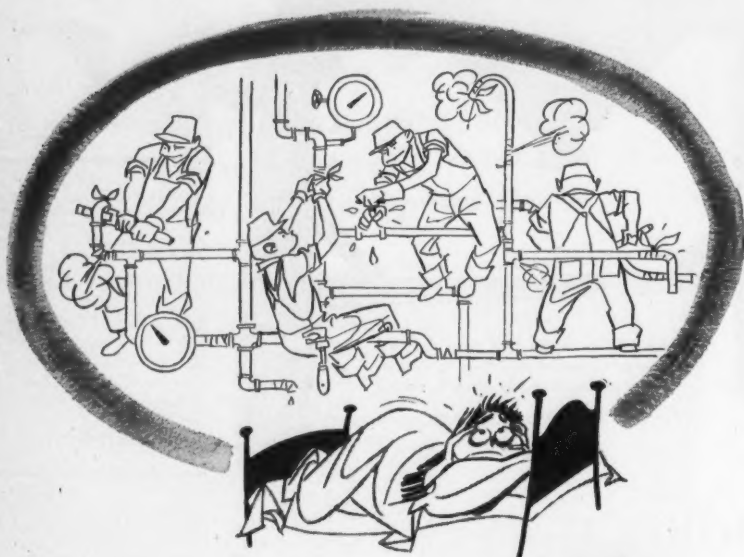
1 MIN.

The mass rotates close to the axis and does not require rapid rotation. Neither separation nor attrition takes place.

2 MIN.

A thorough blend has been achieved. Laboratory or pilot plant blender illustrated is available in 4- and 8-quart sizes.

Say goodbye to nightmares about pipe repairs and replacements!



Install corrosion-resistant saran lined steel pipe wherever you are piping chemicals and solvents. Because saran is extremely resistant to most chemicals and solvents, such installations will give dependable, long-term service and reduce shut-downs due to pipe repairs and replacements. In addition to minimum maintenance cost saran lined steel pipe brings you another important advantage: it is easily field fabricated. No intricate tools required, no waiting for special fabrication, no costly delays. Saran lined steel pipe is manufactured by The Dow Chemical Company.



Write to the Distributor:

SARAN LINED PIPE COMPANY

2415 BURDETTE AVENUE • FERNDALE, MICHIGAN

Offices in: New York • Boston • Pittsburgh • Tulsa
Philadelphia • Chicago • Portland • Indianapolis • San
Francisco • Houston • Denver • Los Angeles • Seattle
Cleveland • Charleston, S. C. • Toronto • Montreal

clip and send today!

Saran Lined Pipe Company,
2415 Burdette Avenue, Ferndale, Michigan
Please send me a copy of your catalog on
Saran Lined Pipe, Valves and Fittings.

Name _____ Title _____
Company _____
Address _____
City _____ State _____

501-1

SARAN LINED PIPE



RELATED PRODUCTS

Saran rubber tank lining—an outstanding lining where resistance to grease, many solvents, acids and other chemicals is indicated.

Saran rubber molded parts—stoppers, diaphragms, various-sized moldings for valves, instruments, etc.

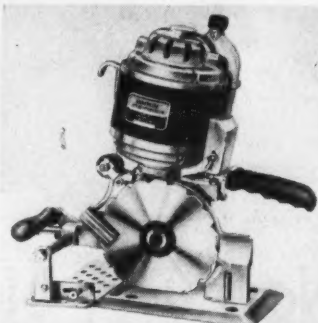
CONSTRUCTION

Rubber two inches thick is cut with hairline accuracy . . .

stops waste, inaccuracy in cutting rubber compositions

Uses: For accurately and quickly cutting rubber and rubber composition materials up to two inches thick.

Features: Hairline accuracy is reportedly guaranteed by manufacturer, regardless of thickness or



Rubber cutting machine has two-handed control for steady and easy handling

hardness of rubber. Cutting machine is intended to eliminate waste, inaccuracy, and tedious hand-cutting operations common to rubber industry.

Description: Stripomatik is heavy-duty, portable cutting machine, which is completely self-contained and has water-fed attachment to lubricate and cool cutting blade. Motor powered unit is equipped with special rollers to prevent friction and to speed cutting.

Precision gage holds rubber firmly to assure industrial tolerances in cutting. Machine has own sharpening mechanism as well as two-handed control to facilitate steady and efficient operation.

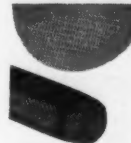
Base plate and blade support are made of bronze. Position of knife support behind machine (not at side) permits easy passage of knife through material. Device may also be installed in series within production line for edge trimming and cutting to size in coordinated operation.

(Product of H. Maimin Co., Inc., Dept. CP, 575 Eighth Ave., New York 18, N. Y. . . or for more information check CP 6868 on handy form, pages 2 and 3.)

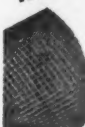


"I found the answer in CUSTOM-BUILT CLEVELAND

strainers and filter screens."



ALL SIZES AND TYPES



Make "Cleveland Wire" your one-stop source of supply for strainers and filter screens. Whatever your filter problem, you'll find an answer at "Cleveland": Strainers and filters custom made in quantities one to a million, in all commercial metals.

We have the equipment, facilities and experience to better serve your needs. Write today for Bulletin No. 7.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 79th STREET • CLEVELAND 5, OHIO

When inquiring check CP 6869 on handy form, pgs. 2-3

FREE GUIDE to proper SPRAY NOZZLE selection

Whatever the application...chemical spraying, evaporative cooling, web spraying, washing, cleaning...you will find this new 40-page catalog of nozzle information helpful. Data includes nozzle dimensions, capacities, illustrations...in short, everything you need. And it's FREE! Just contact: Binks Manufacturing Company, 3120-32 Carroll Ave., Chicago 12, Ill.

Binks Manufacturing Company
3120-32 Carroll Ave., Chicago 12, Ill.
O. K. BINKS. Send me your Spray Nozzle Catalog...FREE!

NAME _____
ORGANIZATION _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

Binks A COMPLETE LINE OF INDUSTRIAL SPRAY NOZZLES AND COOLING TOWERS

When inquiring check CP 6870 on handy form, pgs. 2-3

When inquiring check 6867 on handy form, pgs. 2-3

**Solvent degreaser combines
high flash point with
low toxicity . . .**

works on any metal or fabric, dries rapidly, and leaves no residue or corrosive effect

Uses: Degreaser for metal parts or equipment. It is particularly effective as a degreaser for motors and all electrical equipment. Many industrial plants are adopting compound for general tank cleaning operations. It can be employed on fabrics, as well.

Features: Many times less toxic than carbon tetrachloride, dries rapidly, and leaves no residue or corrosive effect upon metals.

Description: Formula 602 is a high-flash compound of solvents which may be used in wipe, dip or spray applications. Unlike more toxic solvents, compound may be safely sprayed on large parts and machinery in any location where normal ventilation permits fumes to be carried off.

Under normal conditions of use, Formula 602 will not cause dermatitis — continued immersion of hands, as with any good solvent, will have a drying effect on the skin. Wearing of rubber gloves for the latter situation is recommended.

Some specifications of Formula 602 follow:

Specific gravity @ 20°C	0.945
Weight per gallon, lb	7.88
Boiling range, °F	250-365
Flash point (COC), °F	130
Fire point, °F	155-160
Drying time (Compared to mineral spirits)	2x
Residue on drying	none
Corrosion (standard doctor)	negative
Dermatitis (USN 51-D-6)	negative
Color	white

(Manufactured by The Penetone Co., Dept. CP, Tenafly, N. J. . . or for more information check CP 6871 on handy form, pages 2 and 3.)

**Bulletins describe features
of pneumatic equipment**

Two four-page bulletins describe features and give specifications of two pneumatic-operated instruments for use in processing operations. Bul S-15 deals with a pneumatic positioning unit for high-speed positioning and regulating of heavy equipment. Operation of the high capacity valve and actuating mechanism which enable the unit to overcome starting friction and inertia is explained and illustrated. Bulletin contains clearance dimensions for mounting the unit at almost any angle.

Bul 704 discusses a pneumatic-electric flow meter. Unit is especially designed to measure widely fluctuating flows; dirty liquids; corrosive fluids; viscous or vaporous liquids; or flammable, toxic, and other dangerous fluids. Typical applications, operation, and components of the unit are outlined.

Bulletins are issued by Republic Flow Meters Co., Dept. CP, 2240 Diversey Parkway, Chicago 47, Ill. When inquiring specify CP 6872 on handy form, pages 2 and 3.

CANCEROUS CORROSION STOPPED COLD!

**These photos* tell the story —
PRUFLOAT AS GOOD AS NEW
14 MONTHS AFTER APPLICATION**



1. Here's a nutshell demonstration of the superiority of the simple "Prime and Paint" procedure made possible by new Prufcoat Primer P-50. The guard rail in the foreground got routine wire-brushing and scraping, a coat of Prufcoat Primer P-50, and then top coats of Prufcoat "A" Series Vinyl Coating. The mixing tanks in the background got conventional coating treatment. Compare the condition of the coatings after 14 months of service!



2. No sign of peeling or other failure, yet this Prufcoat primed and painted steel ladder and girder have been continuously subjected to corrosive sodium hypochlorite fumes for more than a year. With previous paint systems, in a matter of weeks, mere vibrations in the plant were sufficient to release large scales and sheets of rust. *Photographs courtesy Kuehne Chemical Co. Elizabeth, N. J.



New Prufcoat Primer P-50 Licks Vicious Underfilm Corrosion Caused by Sodium Hypochlorite Fumes

Fumes generated in the manufacture of sodium hypochlorite were attacking every steel surface in the Kuehne Chemical Company plant. To make matters even more disastrous, there didn't appear to be a paint system available that could control the cancerous condition. Underfilm corrosion developed quickly, rust creepage was continual, and the most meticulously applied coatings failed in a matter of weeks.

"We knew our problem was a tough one," says the manufacturer's maintenance chief, "but felt that the vinyls, with their superior chemical resistance, could provide the protection we needed. Only trouble was, where could we find an inhibitive primer that would both stop the existing active corrosion on the metal and which vinyl coatings would adhere to. We're glad to report that Prufcoat Primer P-50 has filled the bill . . . without any sandblasting or other fancy preparation work, too!"

The photographs on this page offer dramatic and conclusive proof that Prufcoat did, indeed, "fill the bill". Applied to vats, motors, and other exposed steel surfaces according to the simple Prufcoat "Prime and Paint" procedure, the Prufcoat "A" Series Vinyl top coats with Prufcoat Primer P-50 underneath are virtually as good as new more than a year later — no peeling, no underfilm corrosion, no coating failure in sight!

What worked for Kuehne Chemical Company will work for you . . . in your plant . . . under your corrosive conditions. Prove that Prufcoat has the answer to your painting problems by writing for the facts today.

How Prufcoat Primer P-50 makes it possible to apply vinyl coatings like ordinary paints

No longer need vinyl coatings be considered in a "specialty" category. Thanks to new Prufcoat Primer P-50, vinyls are now as easy to apply as ordinary paints. After only routine wire-brushing, simply prime with ready-mixed P-50 just as you would with red lead. Vinyl top coats then can be applied after only overnight drying.

Primer P-50 bonds securely to any new or old metal surface, inhibiting underfilm corrosion which so frequently causes premature failures. In addition, its special nature guarantees firm adhesion of all top coats whether vinyl or conventional type. Here at last is one easy, sure-fire priming system for all paints . . . all metal surfaces.

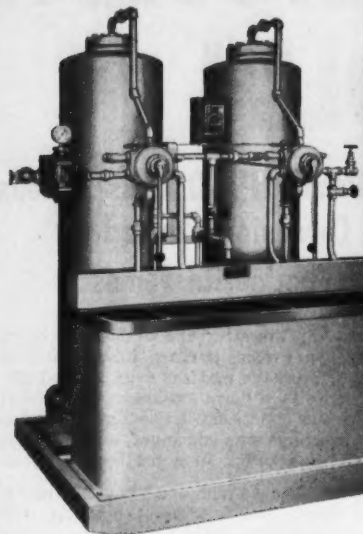
PRUFLOAT LABORATORIES, INC.
50 East 42nd Street, New York 17, N. Y.

**To Save Time, Trouble and Money..
Just "PRIME and PAINT" with PRUFLOAT**

When inquiring check CP 6873 on handy form, pgs. 2-3

PURE WATER *at Low Cost*

for chemical processes

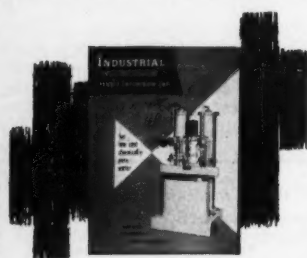


INDUSTRIAL ION-EXCHANGE Demineralizers

A two-bed INDUSTRIAL demineralizer unit. Standard units are available with capacities of 200 to 1000 gph. Special units of any capacity are engineered to requirements.

Since chemically pure water costs so little with an INDUSTRIAL demineralizer, there is no reason for not having the benefits of demineralized water. It simplifies product-quality control in so many processing operations.

The equipment required is very simple—no heat, steam, or cooling water is used. Units can be made to deliver almost any quantity of purified water. The operation is practically automatic—requiring only limited attention periodically.



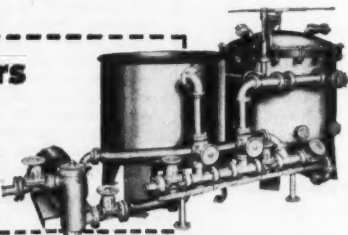
Ask for Bulletin 200

This bulletin gives the details on INDUSTRIAL demineralizers with specifications and performance data on the standard models. If you want information on a particular problem, send us a water analysis, degree of purity required, amount in gallons per hour, and whether the flow is to be continuous.

INDUSTRIAL Filters

For Solution Clarification
Any Solution—Any Quantity

A typical INDUSTRIAL stationary filter. Standard portable and stationary models are available with capacities 100 to 15,000 gph. Special filtering systems are engineered to meet unusual requirements.



Write for full information and recommendations

INDUSTRIAL FILTER & PUMP MFG. CO.

5908 Ogden Avenue
Chicago 50, Illinois

FILTERS PUMPS CORROSION TESTING APPARATUS
Pressure Type Centrifugal Salt Fog Humidity

RUBBER DIVISION WATER
Vulcanized Linings Molded Products DEMINERALIZERS

When inquiring check CP 6874 on handy form, pgs. 2-3

CONSTRUCTION

Penetrates up to 1/16"
in giving H₂O
resistance . . .

invisible upon drying; produces no discoloration

Uses: To impart water repellency to all types of masonry above grade, such as concrete, cast stone, plaster, stucco, clay brick, gypsum, sandstone, cement base and all types of mortar joints.

Features: Transparent, invisible upon drying, produces no discoloration of surfaces, and prevents efflorescence.

Description: Silicote Mason-Shield is based on silicone resins and its penetration may be as high as 1/16" in imparting water repellency. In an immersion test comparing a treated with an untreated brick, the first test specimen had a gain of 2 gm of water in one day as contrasted to 301 gm for the untreated.

Silicote may be brushed or sprayed. It can be applied in any season of the year providing the moisture is not frozen in the walls. Coverage is between 100 to 250 sq ft per gallon depending on the porosity of the masonry.

(Manufactured by The Wilbur & Williams Co., Dept. CP, 130 Lincoln St., Boston 35, (Brighton) Mass. . . or for more information check CP 6875 on handy form, pages 2 and 3.)

Multi-purpose grease
resists heat, cold
and H₂O . . .

will not melt or run at temps to 1000°F

Uses: General purpose lubricant for tools and equipment.

Features: Withstands zero temperatures as well as those ranging to 1000°F. Stated not to lose body or lubricating qualities when subjected to water.

Description: Sotol lubricant consists of a synthetic base, oil, and other organic compounds. It has a transparent amber color and reportedly gives corrosion-resistance to the surfaces to which it is applied.

(Developed by Southwestern Petroleum Co., Inc., Dept. CP, Fort Worth, Tex. . . or for more information check CP 6876 on handy form, pages 2 and 3.)



PALMETTO TEFLON* No. 1330

• SUPERIOR CHEMICAL RESISTANCE

Proven best in wide range of chemical processing equipment handling highly corrosive acids, solvents and alkalis to 550F.

• WIDER APPLICATIONS

No need for special preformed packing for variety of stuffing box sizes. (Note: Palmetto No. 1335—is especially suited for centrifugal pumps.)

• MADE BY UNIQUE PALMETTO PROCESS

Each fibre impregnated with Teflon Suspenoid—then braided or plaited to prevent cross-sectional leakage—and heat treated for maximum performance at temperatures above ordinary conditions.

INVESTIGATE—Look into Palmetto Teflon, among other self-lubricating packings in the complete Palmetto line—get new Catalog PC-102 for full details!

* Teflon is DuPont's trademark for its poly-tetrafluoroethylene.

packing more performance into every application

GREENE, TWEED & CO. NORTH WALES, PA.

When inquiring check CP 6877 on handy form, pgs. 2-3

SIFT
to
Better Quality!

With gravity sifting methods, there's always the danger of segregation during the sifting operation . . . depending on the nature of the mix and its ingredients. When you utilize centrifugal force, as in the

ABBÉ TURBO SIFTER

segregation just doesn't take place. As a matter of fact, users who have to contend with colored ingredients all stress the greater uniformity of color that the Turbo Sifter gives them. The same applies, of course, to ANY ingredients of a mix.

Get Speed, too . . .
and Use Less Floor Space

This unique sifter requires just about 1/4 of the floor space of conventional types, but it will sift 2-10 times as fast, depending on the product involved . . . and will give you cleaner, more thorough separation.

If you're interested in sifting any material at lower cost and with better results, write for Bulletin 65, which tells the full story of the Abbé Turbo Sifter.

ABBÉ ENGINEERING CO. 46 CHURCH STREET NEW YORK 7, N. Y.

Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 6878 on handy form, pgs. 2-3

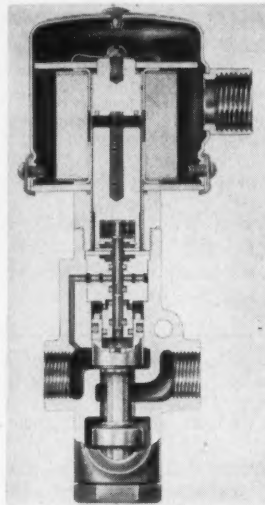
CHEMICAL PROCESSING

**Pressure range of 20—500 psi
for control valve . . .**

fast action assured in compact, 3-way, solenoid controlled pilot unit

Uses: For controlling any light fluid medium such as air, water, and light oils.

Features: Valve has an exceptional pressure range of from 20 to 500 psi for either normally open or normally closed service. Since 3-way pilot valve is partially housed in main valve piston, a very compact unit is obtained. Minimum travel of moving parts assures fast valve action. Valves may be operated continuously up to 600 cycles per minute for smaller sizes.



Cross-sectional view of control valve

Description: Model 1034 solenoid controlled and pilot operated valve has body of cast bronze. Units are supplied with three threaded connections corresponding with nominal port sizes of 1/4, 3/8, 1/2, and 3/4". Free port area in each case is equal to or greater than internal cross-sectional area of equivalent standard pipe. Internal parts

are of stainless steel and brass. Tests of tight sealing, synthetic rubber valve rings indicate long life before replacement.

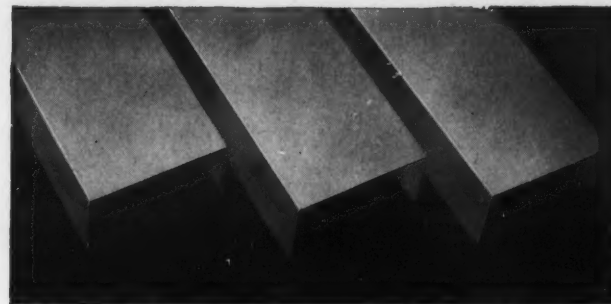
Both solenoid and valve portion of unit are strongly constructed. Either AC or DC coils rated for continuous duty are available for any standard voltage. Threaded outlet of 1/2" diameter in side of casing is adjustable through 360°.

(Announced by Crescent Valve Co., distributed by Barksdale Valves, Dept. CP, 1566 East Slauson Ave., Los Angeles 11, Calif. . . or for more information check CP 6879 on handy form, pages 2 and 3.)

**Illustrates applications of lead
in corrosion-resistant products**

Eight-page bulletin gives a pictorial survey of several uses of various types of lead in chemical construction and fabrication of corrosion-resistant units. Emphasis is given to applications of metal as material of construction for handling acids. Featuring performance charts for lead sheet, in addition to numerous photos and engineering data, bulletin outlines advantages, composition, products, and specifications for several forms of lead.

"Lead" is issued by National Lead Co., Dept. CP, 111 Broadway, New York 6, N. Y. When inquiring specify CP 6880 on handy form, pages 2 and 3.

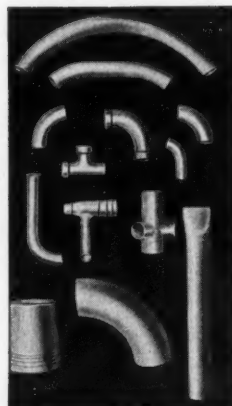


Rectangular Wave Guides made by TRENTWELD



Type 316 TRENTWELD Stainless Steel tubes are used in this Heat Exchanger fabricated by Kewanee-Ross Corp., Buffalo, N. Y.

*any need for stainless or high alloy steel tubing is
better served with **TRENTWELD***



A baker's dozen of fittings made from TRENTWELD tubing

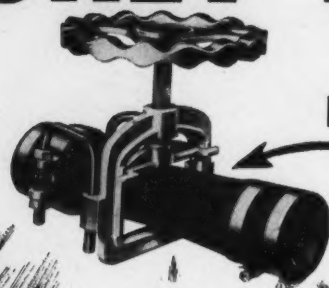
TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

When inquiring check CP 6881 on handy form, pgs. 2-3

YOUR MONEY BACK



IF IT PLUGS

Basically, the Flex-Valve is just a piece of flexible tubing and a clamp to squeeze it shut. It can no more clog than a length of pipe. So, if you can clog one of them in normal service, just tell us, for the "incredible-but-true" record, how in the world you did it, and we'll send your money back.

Flex-Valves have solved thousands of valving headaches—in as many plants as there have been installations made. They can handle anything that flows, including aerated or fluidized solids. They close bubble-tight over $\frac{1}{8}$ " solids. Open, the flow is straight-in-line with the service piping, and completely unobstructed. There are no moving parts in contact with the lading fluid. Available in both natural and synthetic materials for every corrosive or abrasive service.

Complete details on this unique principle of control valving in slip-on, flanged, and air-motor operated types are available on request. Ask for Bulletin 500—without obligation, of course.



505 COMMERCIAL AVE. • PALISADES PARK, N. J.

When inquiring check CP 6882 on handy form, pgs. 2-3

CONSTRUCTION

Electrically charged paint in sprayer produces even finish . . .

design of unit also reported to reduce overspray

Paint is highly ionized in recently developed sprayer so that it is said to differentiate between painted and unpainted surfaces, producing an even finish and penetrating all cavities and crevices. As a consequence, less paint is used in actual operation. Unit also increases efficiency so that manpower requirements are minimized.

Older installations required use of an external electrically charged screen, which did not give uniform ionization of paint spray. As a result these units were only efficient for painting flat or smooth surfaces.

Ionic-High Potential Paint Spraying Equipment includes power supply and control in 80 to 140 kv (peak-to-peak) range. Installations will accommodate power inputs at all standard voltages.

Ionic-Gun featured in equipment is designed for use with a wide variety of adapters.

(Product of Scientific Electric, Dept. CP, 107-119 Monroe St., Garfield, N. J. . . . or for more information check CP 6883 on handy form, pages 2 and 3.)

Teflon V packing rings for low pressure or to 5000 psi . . .

serviceable within temp range from -90 to 500°F

Uses: Notable results have been reported on reciprocating and rotating applications involving valves, pumps, and fittings.

Features: Provide minimum of friction and long, effective seal at low gland pressure.

Description: V packing rings are molded of Teflon and exhibit its chemically inert properties. One type is designed for low pressure and the other for high pressures, up to 5000 psi. Rings can be used against any substance (except molten sodium and fluorine at elevated temperatures) within temperature range of minus 90° to plus 500°F.

(Product of Flexrock Company, Dept. CP, 3611 Filbert St., Philadelphia 4, Pa. . . . or for more information check CP 6884 on handy form, pages 2 and 3.)

GOOD REASONS FOR

INCO-CAST FITTINGS

Monel®, Nickel and Inconel®



1. Resist most corrosives
2. Strong . . . tough . . . sound
3. Withstand high and sub-zero temperatures
4. Protect product purity
5. Controlled alloy composition
6. Pressure-tested
7. Economical in cost
8. All standard types and sizes in threaded and welding fittings
9. Fast service on rated orders to all points from conveniently located distributors' stocks
10. Special shapes and sizes made to order

WRITE

for price list catalog. Contains full information. Sent you promptly, and without obligation.



The International Nickel Company, Inc.
67 Wall Street
New York 5, N. Y.

When inquiring check CP 6885 on handy form, pgs. 2-3



This Spencer Portable Vacuum Cleaner has 30 times the cleaning power of an ordinary home type machine. The dirt can hold $7\frac{1}{2}$ cubic feet of rubbish—and is removed by a foot lever and rolled on casters to the point of disposal. It's built for big business and uses standard Spencer Vacuum tools.

This is the type used by plants having up to 500 acres of floor space to clean every night or tons of metal to pick up and reclaim or bulky raw products to convey. Portable sizes from $1\frac{1}{2}$ to 15 HP. Stationary units to 100 HP. Ask for Bulletin No. 125-D.



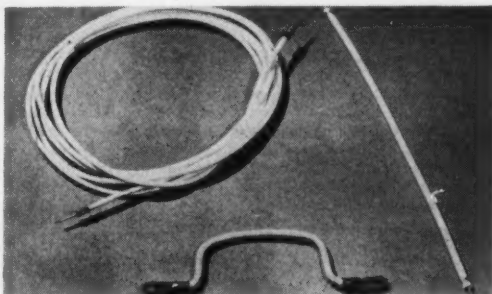
When inquiring check CP 6886 on handy form, pgs. 2-3

Low heat output widely dispersed with flexible elements . . .

suitable for many applications as resistors or thermal transmitters

Flexible heating elements were designed primarily to give wide dispersion of low thermal output in areas where heaters would be crowded and heat localized. In addition, units meet many needs as resistors or heat transmitters.

Acrawatt Flexee-Tube Resistor-Heaters operate in ambient temperatures from -65 to 250°F. Maximum sheath temperature is held to 375°F by regulation of wattage-load requirements of application. Continuous operation at temperatures below these maxima are considered proper for extended life expectancy.



Heating elements with tinned and lug type terminals

Resistors are of non-ferrous round resistance wire helically wound on asbestos or fibreglass cord. Insulation consists of single wall fibreglass sleeve for normal dielectric test requirements of 500 volts. For tests up to 1000 volts, double-wall sleeve is used.

Lengths available are from 2" to 20' overall. Diameters run from 0.108 to 0.190" over their insulated surfaces, depending on degree of dielectric constant required or watts output per linear inch. Tinned terminals 1/16" diameter in desired length or lug type terminals can be obtained. Black, natural, yellow, and red insulation can be supplied for coding.

(Product of Acra Industrial Electric Co., Dept. CP, 9901 Pacific Ave., Franklin Park, Ill. . . . or for more information check CP 6887 on handy form, pages 2 and 3.)

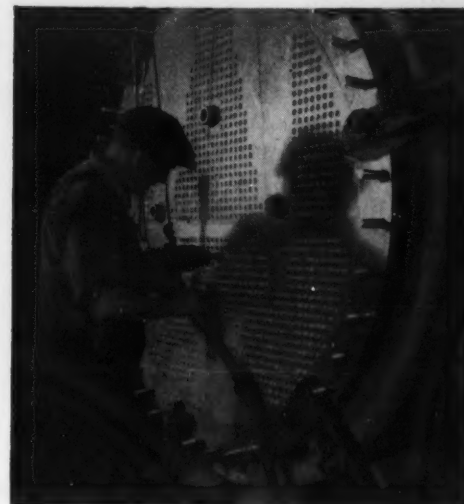
Offers interior and exterior views of polyphase induction motors

Design and construction highlights of wound-rotor and squirrel-cage polyphase induction motors are shown in 24 photographs of six-page bulletin. Models described are serviceable for constant or adjustable speed applications. Motors vary in ratings from 25 to 500 hp and are available in open or fully protected drip-proof, splash-proof, self pipe-ventilated, and separately forced-ventilated housings.

Bul 37-200 is issued by The Electric Products Co., Dept. CP, 1725 Clarkstone Rd., Cleveland 12, Ohio. When inquiring specify CP 6888 on handy form, pages 2 and 3.

FACT

ABOUT TUBE FABRICATION



In addition to saving up to 80 per cent in material costs, Alcoa Aluminum Heat Exchanger Tubes make further savings in fabrication. Their ductility makes them easy to roll in and bead. Completed bundles weigh considerably less than bundles made of heavy metal tubes. This lighter weight is favorably reflected in lower shipping and handling costs.

ALCOA

knows most about their use and application

Alcoa pioneered the use of aluminum in heat exchanger tubes 43 years ago. For complete information on their application and installation, write for a copy of the booklet, *Alcoa Aluminum Heat Exchanger Tubes*. Write:

ALUMINUM COMPANY OF AMERICA
1861-M Gulf Building • Pittsburgh 19, Pa.



OVER 6-MILLION FEET OF ALCOA TUBES ARE IN USE FOR APPLICATIONS LIKE THESE . . .

PETROLEUM		CHEMICAL		
Condensers handling hydrocarbon fractions from such processes as Thermal and Catalytic cracking, reforming, polymerizing, etc.	Hydrogen sulfide gas coolers	Butanol	Furfural	Hydrogen Cyanide
Vapor recovery condensers	Furfural condensers and heat exchangers	Ethanol	Heptaldehyde	Nitric acid (concentrated)
Lube oil coolers	Propane chilling	Ethylene Glycol	Acetic acid	Pyridine
Natural gas compressor after-coolers	Wax sweaters	Glycerin	Stearic, Palmitic, Maleic, Oleic acids	Hydrogen Sulfide
Recompressor after-coolers	Lean oil-rich oil exchangers	Hydroabietyl	Butyric acid	Benzene
	Amine solution coolers	Isopropanol	Naphtha	Dichlorobenzene
	Glycol-amine heat exchangers and reboilers	Methanol	Ricinoleic acid	Gelatin
		Phenol	Acetanilide	Hydrogen Peroxide
		Propylene Glycol	Turpentine	Xylene
		Acetaldehyde		
		Formaldehyde		

Use Alcoa Alclad 3S-H14 Heat Exchanger Tubes with fresh, brackish and salt-cooling waters

When inquiring check CP 6889 on handy form, pgs. 2-3

"No Corrosion Troubles Since 1935"

....with
ACID-PROOF TANTALUM

"Way back in 1935 we found that the effective answer to acid corrosion troubles is tantalum heat exchangers. Not only are they really acid-proof, they will take high steam pressures—which speeds production—they require almost no maintenance, there is no thermal shock problem, and we know from experience they last a long time."



**TANTALUM SHELL
AND TUBE HEAT EXCHANGER**

Contains 174 seamless tubes with heating area of 187.5 sq. ft. Using 150-pound steam, this unit will transmit roughly 4,000,000 Btu per hour. Smaller or larger units can be built for your process.

Use **TANTALUM** with Economy for most acid solutions, corrosive gases or vapors; not with HF, alkalis, or substances containing free SO_3 .

Consult **Fansteel** for designs and recommendations



Acid-Proof

TANTALUM

22406C

Fansteel Metallurgical Corporation NORTH CHICAGO, ILLINOIS, U.S.A.

When inquiring check CP 6890 on handy form, pgs. 2-3

CONSTRUCTION

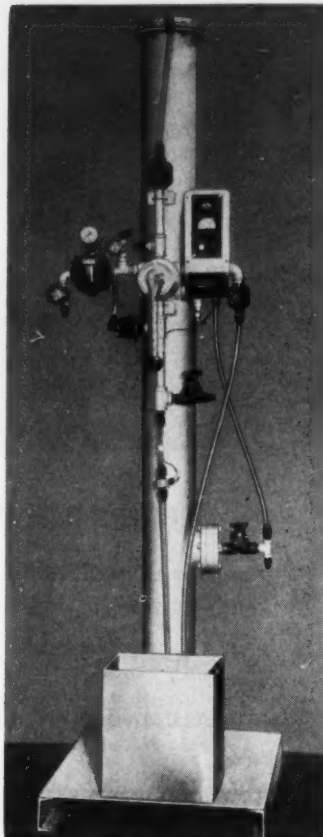
**100 gph of pure H_2O
is produced without
heat or steam . . .**

can install demineralizer in small space

Uses: To provide mineral-free water for boiler feed, processing, and similar functions.

Features: Efficiencies of mixed bed ion exchange action is combined with simple and fast regeneration system.

Description: Mono-Column Demineralizer will automatically yield 100 gph of high purity water without use of heat or steam power. It



Mono-Column Demineralizer is easily installed

is installed in 2 x 2 x 7'6" space by connecting influent to plant's water system and connecting effluent to points where water is required.

Raw water enters unit at influent, passes through column of mixed cation and anion resins only once, and is received at effluent stripped of all impurities. Flow meter enables operator to control water in-

SPECIALLY FABRICATED
PLATECOILS FOR THE
TEXTILE AND CHEMICAL
INDUSTRY

NOW AVAILABLE

**Stainless Steel
PLATECOILS**
REPLACE PIPE COILS

faster heat transfer for 50% of the cost

Stainless Steel Platecoils in a large variety of standard sizes or standard single embossed Platecoils rolled to specific diameters as shown above are finding increasing use in industry because they give five basic advantages in solving heat transfer problems. 1. Lower first cost. 2. Simplified and less costly installation. 3. Takes less space in tank. 4. Higher heat transfer rate. 5. No pipe joints in solution.

Send for complete
technical manual and
descriptive Bulletin
No. P54.

PLATECOIL

KOLD-HOLD MFG. CO.
LANSING 4, MICHIGAN

When inquiring check CP 6891 on handy form, pgs. 2-3

DM
RESISTANT MATERIALS

SPECIALISTS IN ALL
**RESISTANT
PIPING MATERIALS**
TO YOUR SPECIFICATIONS

**PIPE • VALVES
FITTINGS • FASTENINGS**

STAINLESS • ALUMINUM • SARAN
HARD RUBBER • POLYETHYLENE
TYGON • USCOLITE • EVERDUR

FULL RANGE OF SIZES

Complete Stocks—Prompt Shipment
(Reference No. CP 1252)

RAY MILLER

254 NORTH 10th STREET, NEWARK 7, N. J.
4240 KANAWHA T'PK., SO. CHARLESTON, W. VA.
1210 HAYS STREET, HOUSTON, TEXAS

When inquiring check CP 6892 on handy form, pgs. 2-3

CHEMICAL PROCESSING

take for efficient ion exchange action. Another meter indicates purity of demineralized water being received at effluent.

Regeneration of resins takes less than an hour by means of system which is integral part of unit. All lines and valves contacting corrosive regeneratives, including effluent lines, are made of plastic.

Central control valve is made of acid-resisting bronze and all influent and distribution piping is red brass. Demineralizer has "visual window" so that central distribution system can be removed without emptying column of its resins.

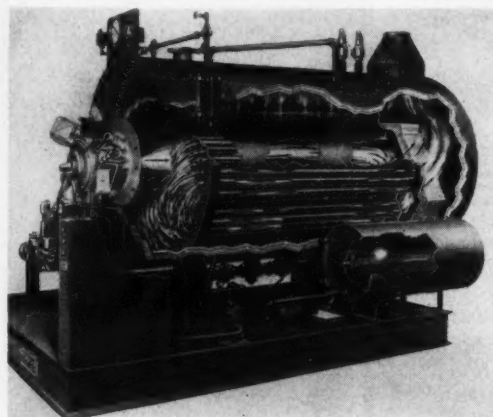
(Product of Penfield Mfg. Co., Inc., Dept. CP, 19 High School Ave., Meriden, Conn. . . or for more information check CP 6893 on handy form, pgs. 2-3.)

Three-pass internal construction gives efficiency, economy in automatic steam generator . . .

unit available in 16 sizes with range from 15 hp to 500 hp for pressures up to 250 psi

Basic component of automatic packaged steam generator is horizontal fire-tube boiler. Maker reports that three-pass internal construction of unit gives high efficiency and economical operation. Burners for light oil, heavy oil, and commercial gas fuels as well as dual combination burners modulate with uniformly high efficiency between 30% and 100% of full load rating.

Combustion gases travel through central combustion tube, flow back through lower bank of tubes, and then again toward the rear branching through two



Cutaway view shows construction of three-pass boiler with condensate and makeup system

lateral banks of tubes. Precision designed combustion chamber assures complete combustion within furnace. Boiler feed and condensate handling system is optional. Completely integrated control system and interlocking safety devices are part of each unit. Heat transfer is reported to be in order of 4.5 to 5.0 sq ft per boiler horsepower.

(Powermaster steam generators are products of Orr and Sembower, Inc., Dept. CP, Morgantown Rd., Reading, Pa. . . or for more information check CP 6894 on handy form, pages 2 and 3.)

THE BIG LINE OF VACUUM PUMPS

COMPOUND PUMPS

Model	Free air displacement
Model CVM 3153	2 cu. ft. per min.
Model CVM 3534	5 cu. ft. per min.
Model CVM 556	15 cu. ft. per min.
Model CVM 8610	46 cu. ft. per min.

SINGLE STAGE PUMPS

Model	Free air displacement
Model VSM 556	13 cu. ft. per min.
Model VSD 776	27 cu. ft. per min.
Model VSD 8811	47 cu. ft. per min.
Model DVD 8810	110 cu. ft. per min.
Model DVM 12814	218 cu. ft. per min.
Model DVD 14918	311 cu. ft. per min.
Model DVD 141418	486 cu. ft. per min.
Model DVD 181420	702 cu. ft. per min.
Model DVD 272034	1600 cu. ft. per min.

There's a Kinney Pump for every vacuum requirement. Write for Bulletin V-518. Kinney Manufacturing Co., 3573 Washington St., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Philadelphia, Houston, New Orleans, Los Angeles, San Francisco, Seattle. FOREIGN REPRESENTATIVES: Gen'l Engineering Co., Ltd., Radcliffe, Lancs., England. • Horrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia • W. S. Thomas & Taylor Pty., Ltd., Johannesburg, South Africa • Novelectric, Ltd., Zurich, Switzerland • C.I.R.E., Piazza Cavour 25, Rome, Italy.

When inquiring check CP 6895 on handy form, pgs. 2-3

PROBLEM:

To dry CALCIUM CARBONATE, a wet-solid, quickly, and increase the output, yet control the uniformity and quality of the finished product.

SOLUTION:

By combining the principle of a Proctor preforming feed and a continuous conveyor dryer, Proctor engineers recommended a system that obtained the results required. On a Proctor fin drum feed, material was discharged to the conveyor in the form of small sticks. Heated air circulated through the bed of the material on the conveyor, resulted in rapid, uniform, through drying. Speed of production was increased and quality of finished product was accurately controlled.

Another processing problem solved by PROCTOR

INTEGRATED ENGINEERING

This processing problem was solved only by painstaking research. Exhaustive test work done in the Proctor laboratory, in cooperation with the customer's technicians, netted conclusive results that were projected into full scale operation. So accurate was this work that the performance of the drying system was guaranteed in the sales contract and the dryer was designed to dovetail right into the complete processing line. This approach to a processing problem is INTEGRATED ENGINEERING AT WORK!

By INTEGRATED ENGINEERING

we mean simply this—

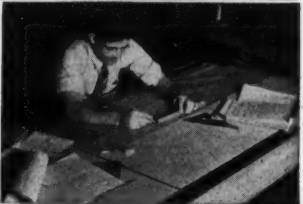
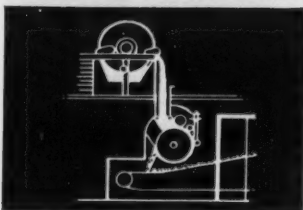
1. Sales engineers are available for consultation.
2. A completely equipped experimental laboratory is available for test work at no cost or obligation.
3. Engineering background and experience in drying equipment and its relation to associated processing equipment in the range.
4. Close cooperation between Proctor engineers and the customer's technicians to bring about the solution to processing problems.

NOW PROCTOR IS PREPARED TO ENGINEER AND MANUFACTURE RELATED EQUIPMENT

With their long background in designing and building precision drying machinery, Proctor engineers have acquired a wide knowledge of processing equipment requirements... so that today Proctor & Schwartz actually offers a complete engineering-manufacturing facility ready to help you consider not only your drying equipment needs—but a complete range of related processing equipment.

What is your processing machinery problem? Let Proctor INTEGRATED ENGINEERING help speed your solution.

When inquiring check CP 6896 on handy form, pgs. 2-3



PROCTOR & SCHWARTZ INC.

633 TABOR ROAD
Philadelphia 20, Pa.



CONSTRUCTION & MAINTENANCE

Variable-speed drive cuts time for speed changes with simple adjustment...

pitch diameter is changed easily and positively by means of a one-point adjustment



Typical application of variable-speed drive. Operator adjusts pitch diameter easily and quickly with socket wrench

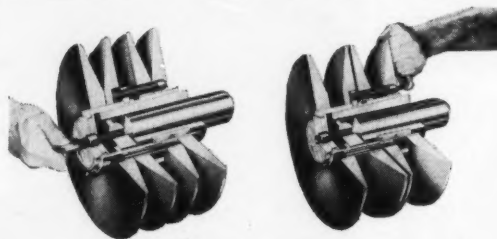
Uses: Increases range of applications where units of this type are normally used.

Features: Pitch diameter is changed by means of simple one-point adjustment. Speed changes may be made rapidly.

Description: Components of variable-speed drive are: 1) variable pitch motor sheave, 2) set of wide range belts, 3) companion sheave, and 4) a slide motor base. Drive is very

compact and sheaves occupy minimum space on shaft. Variable sheave assembly locks on motor shaft as a unit with turn of a screw.

Pitch diameter is changed by means of one-point

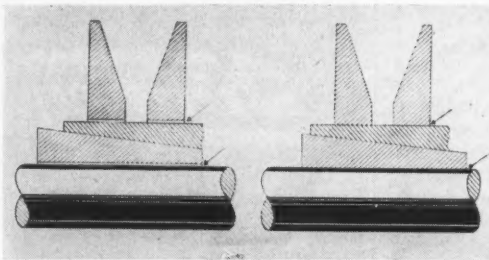


Cutaway view of variable pitch sheave

adjustment. Adjustment can be set accurately and cylinder speeds held to extremely close-limits.

Belts furnished with unit are oil-proof, heat-resistant, and static conducting.

Precision grooved companion sheave is factory-balanced and runs true. Unique principle used in bushing contributes to speed and accuracy of unit.



Sectional view of variable pitch sheave showing how adequate clearances (arrows, left) allow free movement when installing or adjusting. Clearances reduce to zero (right) when locking screw is adjusted



for
SUBMERGED OILLESS BEARINGS



- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE—even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

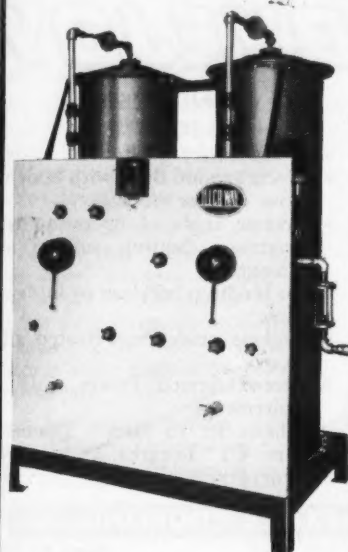
GRAPHITE METALLIZING CORPORATION

1004 NEPPERHAN AVENUE • YONKERS, N. Y.

When inquiring check CP 6897 on handy form, pgs. 2-3

CHEMICAL PROCESSING

De-ionized Water in a "package"



One of the newest ILLCO-WAY "package" De-ionizers, two-bed type. Shipped completely assembled.

A complete line of standard (package-type) De-ionizers—for production of solids-free De-ionized water used for solution make-up, rinsing, sealing rinse after anodizing (flow rates from 100 to 1000 gph.).

Units are compact, shipped completely assembled and base-mounted for ease of installation and operation, requiring only connection to raw water, drain and treated water outlets.

Three types: Mixed-Bed and standard two-bed, with or without silica removal. Ideal production units; convenient for laboratory and pilot-plant research.

Send for your free copy...

of Bulletin PK-152, containing general unit specifications, complete description of equipment and performance data. Please write on company letterhead. Address: Illinois Water Treatment Co., 903-12 Cedar St., Rockford, Illinois.

Which package?

ILLCO-WAY

ionXchange

When inquiring check CP 6898 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Slide motor base permits changes in center distances to preserve proper belt tension as variable pitch sheave is adjusted for different speeds.

(Dodge Variable Speed Drives are products of Dodge Manufacturing Corp., Dept. CP, Mishawaka, Ind. . . or for more information check CP 6899 on handy form, pages 2 and 3.)

Temperature and pressure relief for hot water tanks and heaters in one combination valve . . .

utilizes operating mechanisms of two time-tested valves in one assembly

Uses: For hot water tanks and heaters.

Features: Units afford protection against both excessive temperature and pressure in one assembly. Valves are actually a combination of two time-tested valves, one for pressure relief and one for temperature relief.

Description: Known as 202 Series, combination T & P valves are of automatic re-setting type. For pressure relief, 202 Series employs mechanism of McDonnell 230 Series Valves. Pressure relieving capacities are steam rated and have been established by independent laboratory tests.

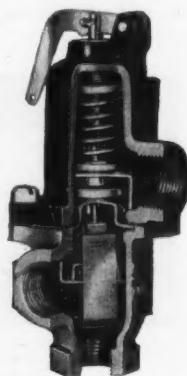
For temperature relief, 202 Series utilizes operating mechanism of manufacturer's 201 development. Adaptation of powerful, highly accurate Vernatherm element starts to open valve at 188°F, reaches full capacity at 208°F, and reseats drip-tight again at 183°F.

In addition to inlet and drain connections, No. 202 has third 3/4" connection so hot water supply to fixtures can flow right through valve. This gives thermostatic element a true picture of tank temperature without lag and means quick response to variations.

Waterways through 202 Series are large and free flowing. All operating parts are non-ferrous, corrosion-resistant material. Valve can be easily disassembled and reassembled for servicing or replacing parts. Factory settings are non-adjustable and tamper-proof. Test lever has independent action, so that tying or holding it down cannot interfere with automatic operation of valve.

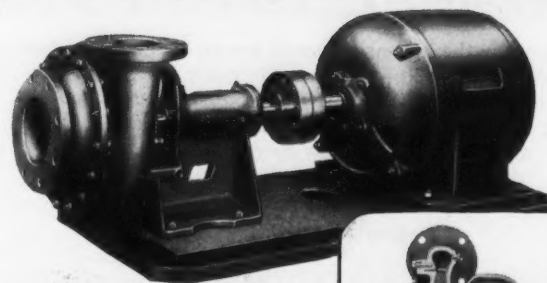
Valves are available with standard opening pressure settings of 75, 100, or 125 lb. Temperature relieving capacities for all valves, regardless of opening pressure, is 725,000 Btu/hr. Units can be ordered without 3/4" fixture connection if it is not desired.

(Product of McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. . . or for more information check CP 6900 on handy form, pages 2 and 3.)



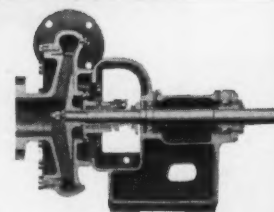
Pressure relief mechanism is in top portion of valve and that for temperature relief in bottom

Goulds single stage... open impeller centrifugal

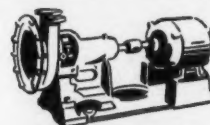


GOULDS Fig. 3169

Stuffing box provided with lantern-type seal ring and with tapped openings. In corrosive liquid pumping, seal may be connected to a fresh liquid supply or fitted with a special lubricator containing a nonsolvent lubricant. Mechanical seal may be substituted for stuffing box where desired.



Other GOULDS Pumps for the Chemical Industry



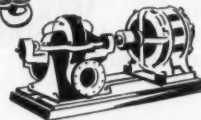
GOULDS Fig. 3705

Stainless steel pumps for handling acid and alkaline liquids. Capacities up to 600 G.P.M. Heads up to 160 ft.



GOULDS Fig. 3047

Nonclogging impellers of these vertical sump pumps will handle water containing large solids or fibrous materials.



GOULDS Fig. 3450

These double-suction, single-stage Goulds centrifugals will handle up to 15,000 G.P.M. Heads up to 500 ft. Send for Bulletin 721.2.

One pump that does many different jobs

- General Water Service
- Transfer
- Processing
- Slurries
- Circulation
- Factory Wastes
- And Many Others

This low cost Goulds Fig. 3169 centrifugal pump offers tremendous versatility. It is as much at home in industrial processing as it is in handling general water service or plant wastes. Its simple, sturdy construction assures long service life with a minimum of maintenance.

Compactly built, this pump is a real space saver. Its modern hydraulic design assures high operating efficiency with relatively low power consumption. Available in a wide range of sizes for both motor and belt drives. Capacities to 1080 G.P.M. Heads to 290 ft. For complete details and specifications, write for Bulletin 720.4.



Goulds

PUMPS INC.

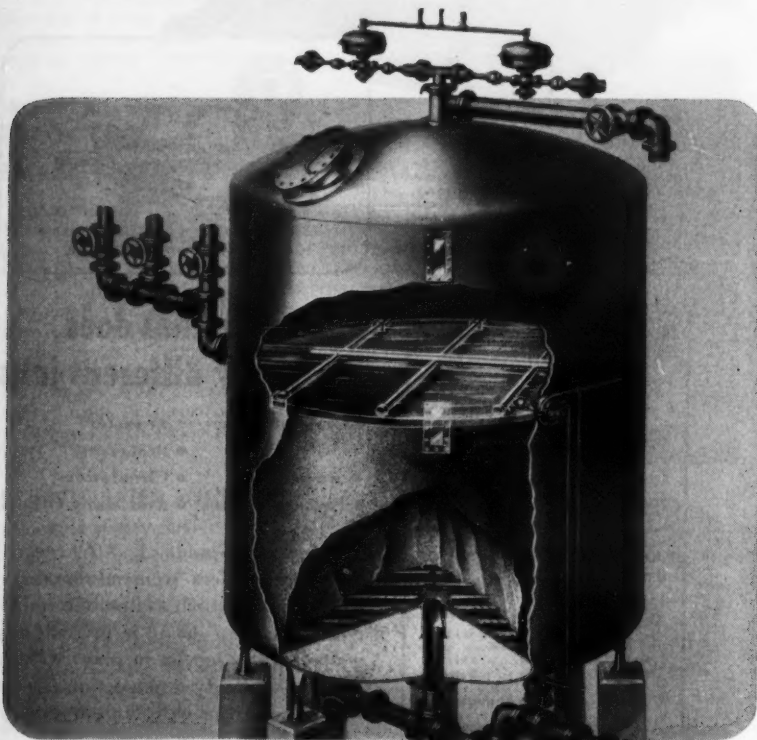
Schenectady
New York

When inquiring check CP 6901 on handy form, pgs. 2-3

When you're thinking of ION-EXCHANGE

make Dorr's
experience a part of your plan—

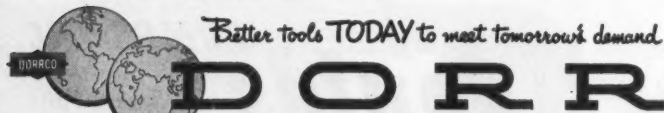
Equipment for the increasing use of ion-exchange techniques in the chemical process industries is being continually developed and improved by Dorr engineers. Whenever you are thinking of ion-exchange make use of our experience . . . from problem analysis to initial plant operation.



One of these developments is the ion-exchange cell shown here . . . a typical Dorr design for chemical applications. Its exclusive features provide . . .

• Minimum dilution of solutions treated, through use of air-dome operation with automatic level control.

• Maximum use of cell volume by elimination of inert supporting medium for exchange resins, through use of non-clogging under-drain distributors.



WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.
Offices, Associated Companies or Representatives in principal cities of the world.

When inquiring check CP 6902 on handy form, pgs. 2-3

CONSTRUCTION

**Inert plastic lining
for tanks of any
size or shape . . .**

fabricated to include drain, valves, and fittings

Uses: Chemically inert plastic is fabricated into tank liners of all sizes and shapes.

Features: Fabricated tanks resist corrosion, leakage, and reduces maintenance or replacement of storage, make-up, and plating tanks containing corrosive liquids.

Description: Tank liners are made of Agilene (Polyethylene) and Agilide (Unplasticized polyvinyl chloride). They are of fully



Tank liners are made of inert plastic in all sizes and shapes

welded construction and are made to desired specifications. Can be furnished with drain, overflows, flanges, fittings, and valves to permit incorporation into existing installations.

Tank liners are made with wall thicknesses up to one inch. According to size and complexity of liner, they may be fabricated at plant or at site of final installation.

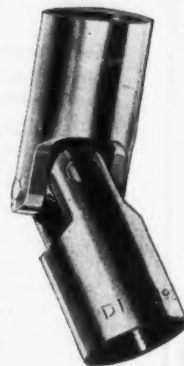
(Product of American Agile Corporation, Dept. CP, P.O. Box 168, Bedford, Ohio . . . or for more information check CP 6903 on handy form, pages 2 and 3.)

**Enamel is odorless
and washable**

Mattona Flat Enamel is an alkyd-flat finish for interiors. Coating is completely odorless and washable. It will be available in 12 standard colors and white. Color samples as well as literature are issued by manufacturer.

(Product of McDougall-Butler Co. Inc., Dept. CP, Buffalo 14, N. Y. . . . or for more information check CP 6904 on handy form, pages 2 and 3.)

6 GOOD REASONS FOR CHOOSING . . LOVEJOY



UNIVERSAL JOINTS

- Concentricity guaranteed to .001.
- Rivets ground flush with body for close quarter work.
- Greater angle of operation with maximum bearing surface and strength.
- No binding, backlash or inplay of pins.
- Highest grade, heat-treated alloy steel.
- Exceed Armed Forces rigid requirements.

Available in 13 sizes. Diameters 1/2" to 4". Lengths 2" to 10 5/8".

WRITE FOR CATALOG TODAY

LOVEJOY FLEXIBLE COUPLING CO.

5072 W. Lake Street Chicago 44, Illinois
Also Mfrs. Lovejoy Flexible Couplings and
Lovejoy Variable Speed Transmissions

When inquiring check CP 6905 on handy form, pgs. 2-3

MOLYKOTE®

termed the
**MOST
FASCINATING
LUBRICANTS**
in this thermal age

HEAT COLD
EXTREME BEARING PRESSURES
Conventional lubricants just can't
measure up to the job to be done

Send for new literature on MOLYKOTE colloidal
dispersions . . . bonded coatings . . . extreme
bearing pressure greases . . . dry lubricants . . .
special grade for internal combustion engines, etc.

THE ALPHA CORPORATION
GREENWICH, CONN.

When inquiring check CP 6906 on handy form, pgs. 2-3

CHEMICAL PROCESSING

High slip induction type motor is 30% smaller, 40% lighter than standard model

Uses: For accelerating high-inertia loads such as punch presses, centrifuges, and hoists.

Features: Unit is as much as 30% smaller and 40% lighter than conventional totally enclosed, fan-cooled, high slip motors.

Description: Space and weight reduction in totally enclosed, fan-cooled, high-slip induction motor is result of extended bar design which provides efficient dissipation of increased heat normally generated by this type unit.

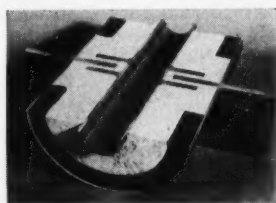
Low-resistance rotor bars are extended on one end of motor and pass through rotating baffle plate. Beyond this plate, the bars are brazed to strips of metal shaped to form radial-blade fan. Fan blades provide higher rotor resistance necessary for high-slip characteristics. Thus, most of rotor heat develops where there is direct transfer to cooling air (outside motor enclosure).

Reduced heating within motor enclosure allows normal air gap between rotor and stator to be maintained. This contributes to reducing operating costs, inasmuch as there is no loss of electrical efficiency. Type KRX motor is available in 30 to 150 horsepower at 900 and 1200 revolutions per minute, 5 to 8 and 8 to 13 percent slip. Voltage ratings are 220, 440, and 550.

(Product of General Electric Co., Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 6907 on handy form, pages 2 and 3.)

Electrolytic action eliminated, heat loss reduced by anchor for insulated piping

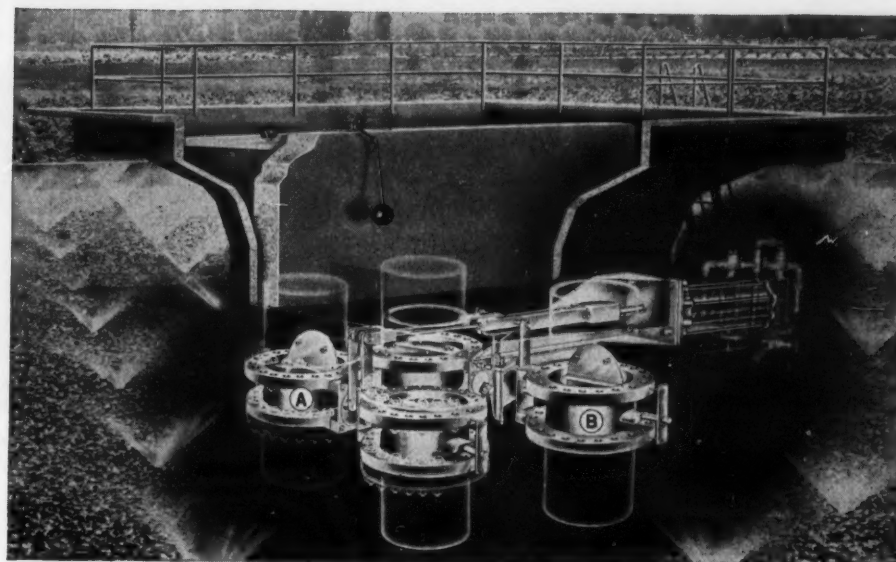
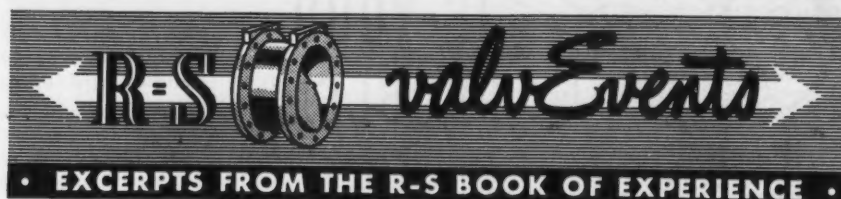
Underground insulated pipe systems will have lower heat losses and will be protected from electrolytic action by anchor designed for use with piping. Anchor is so constructed that contact is eliminated between anchor plate and pipe. Plate is insulated from pipeline both thermally and electrically by a non-compressible block of Transite sheet material.



Cross section view of anchor for underground insulated piping

Construction and material used in anchor serves to reduce heat loss at anchorage points and prevent pipeline corrosion due to electrolytic action. Entire line can now be insulated from ground by taking supplementary precautions to insulate line at terminals. Underground insulated pipe systems are utilized for conveying either hot or cold liquids or gases.

(Product of Durant Insulated Pipe Co., Dept. CP, Warren Way and Bay Road, Palo Alto, Calif. . . or for more information check CP 6908 on handy form, pages 2 and 3.)



R-S Simplified Sewage Control System

This dosing pit control system is located in the Ontario-Upland, California, sewage treatment plant. In continuous operation day and night for over two and one-half years, it shows the tandem cycling of the valves which occurs every four minutes.

The system consists of four twenty-four inch heavy duty R-S Valves operated by a single water cylinder through cross linkage. While the far pit is filling through valve (A), the near pit is draining through valve (B) and discharging through the spray nozzles. As soon as the far pit is full, the float control will actuate the water cylinder by means of air operated three way valves, thus draining the pit and filling the near pit at the same time. Handwheel operation is provided for emergency use.

Rugged construction with minimum friction means long life and trouble-free operation for R-S Valves.

Consult your local R-S Valve Engineers, or write direct.

R-S PRODUCTS CORPORATION • 4600 Germantown Ave., Philadelphia 44, Pa.

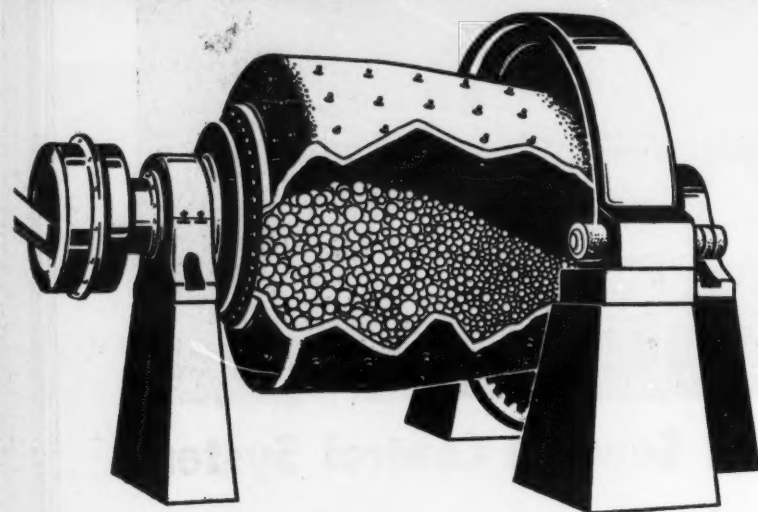
An S. Morgan Smith Company Subsidiary

DISTRICT OFFICES IN PRINCIPAL CITIES

When inquiring check CP 6909 on handy form, pgs. 2-3



IF YOUR PROBLEM IS SIZE REDUCTION



THEN INVESTIGATE HARDINGE TRICONE MILLS

Here are some of the reasons why the Hardinge Tricone Mill is more efficient than other mills:

1. The tapered barrel causes correct ball alignment. Grinding energy is conserved thereby. Ball consumption is reduced, the big fellows are kept away from the little ones.
2. The Tricone Mill occupies less floor space for a given grinding volume than any other type of mill ever built.
3. New design bearings reduce friction and cut over-all power consumption about 5%.
4. When crowded for more capacity, a grate is added, at a proportionate increase in power, but with this type of grate mill, the larger balls are kept at the feed end, and only smaller balls are in contact with the grate, which minimizes wear.
5. Tapered ends reduce end friction, as is evidenced by lower liner consumption and power.
6. Ideal for large tonnages.

Write for Bulletin AH-414-13.

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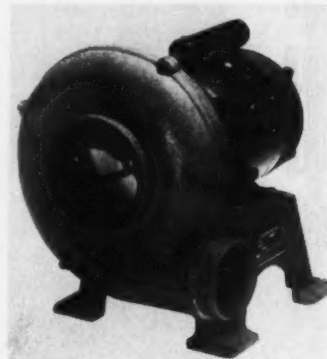
When inquiring check CP 6910 on handy form, pgs. 2-3

CONSTRUCTION

Movement of 450 cfm of air removes dust, smoke, and fumes

High pressure blower is intended to quickly remove fumes, smoke, dust, sawdust, and obnoxious odors at speeds up to 450 cfm of air.

Standard unit is constructed of aluminum with 5½" inlet and 3½" outlet. Power is supplied by



Standard model of high pressure blower has 5½" inlet and 3½" outlet

1/6 hp, 115 v, single phase AC motor, which is rated at 3450 rpm. Larger sizes with different speeds and current characteristics can be obtained.

(Product of Standard Electric Manufacturing Company, Incorporated, Dept. CP, West Berlin 12, New Jersey . . . or for more information check CP 6911 on handy form, pages 2 and 3.)

Features, operation of water stills

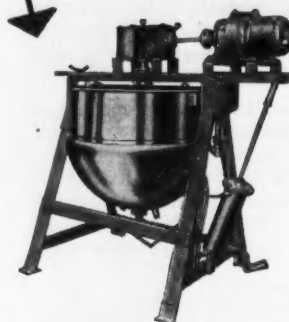
Recommended for use even with the hardest of raw waters, according to manufacturer, industrial water stills described in 12-page bulletin are designed for use where requirements call for heavy duty units with large capacity.

Bulletin includes description of equipment for water distillation and storage. Stills included in discussion range from 5 to 100 or more gallons per hour, storage tanks, from 10 to 500 gallon capacity.

Bul 950 is issued on letterhead request to Precision Scientific Company, Dept. CP, 3737 W. Cortland Street, Chicago 47, Illinois.

LEE headquarters for the Standard and Special Designs

CORROSION-RESISTANT KETTLES



Available in sizes up to 500 gallon capacity to meet every processing need. Easy to clean and keep clean, they are practical and meet all sanitary regulations. All Lee kettles are available with hydraulic cylinders where your own water line provides the necessary operating power to safely control tilting kettles and tilting agitators in agitator kettles.

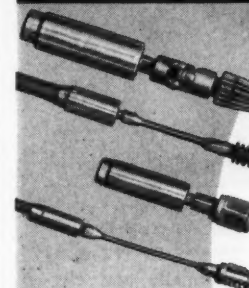
Our new descriptive bulletins sent on request.

LEE METAL PRODUCTS CO., INC.
418 PINE STREET, PHILIPSBURG, PA.

All Lee Kettles are made to A.S.M.E. Code

When inquiring check CP 6912 on handy form, pgs. 2-3

Cleaning small tubes is a LAGONDA job.



Anything from ½ in. ID up is duck soup for this broad line of hard-biting cutters, brushes, scrapers, and the powerful little "600" motor that drives them. They get around curves too, with short, flexible couplings and special hose of maximum inside capacity.

For straight tubes, the new Lagonda condenser tube cleaner, of suspension type with two-way ball thrust bearings and trigger control.

Write for bulletins.



ELLIOTT Company
LAGONDA DIVISION • SPRINGFIELD, OHIO
DISTRICT OFFICES IN PRINCIPAL CITIES

When inquiring check CP 6913 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Asphalt, tar, joint compounds melted in furnace burning bottled gas . . .

flame doesn't impinge on pot, thus contents are evenly heated

Uses: For melting and heating joint compound for sewer and water lines as well as heating asphalt, tar, and similar materials for expansion joint filling or small patch work.

Features: Furnace burns liquified petroleum gas commonly known as bottled gas. Contents are evenly heated since flame does not impinge on pot. No carbon, priming, or pumping.

Description: Three wheel mounted and two base mounted models of furnace are available in capacities of 15, 25, 4, and 10 gallons. Heat from enclosed burners may be increased or decreased by adjusting single valve. All furnaces have removable steel shells to simplify inspection and cleaning. Overall width and height of largest wheel mounted unit is 38½ x 43", while both base mounted furnaces measure 17 x 26".

Standard equipment with gas burner includes pressure regulator and gage, hose, and connections to attach to cylinder of gas. Furnaces can be used with either top connection or side connection type gas cylinders. Maximum gas consumption of the unit at 15 psi ranges from 40,000 to 220,000 Btu per hour.

(Product of Hauck Mfg. Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. . . . or for more information check CP 6914 on handy form, pages 2 and 3.)

Can apply mold-resistant enamel and undercoat to surfaces not completely dry . . .

fungicide-containing products also offer resistance to abrasion, acids and alkalis

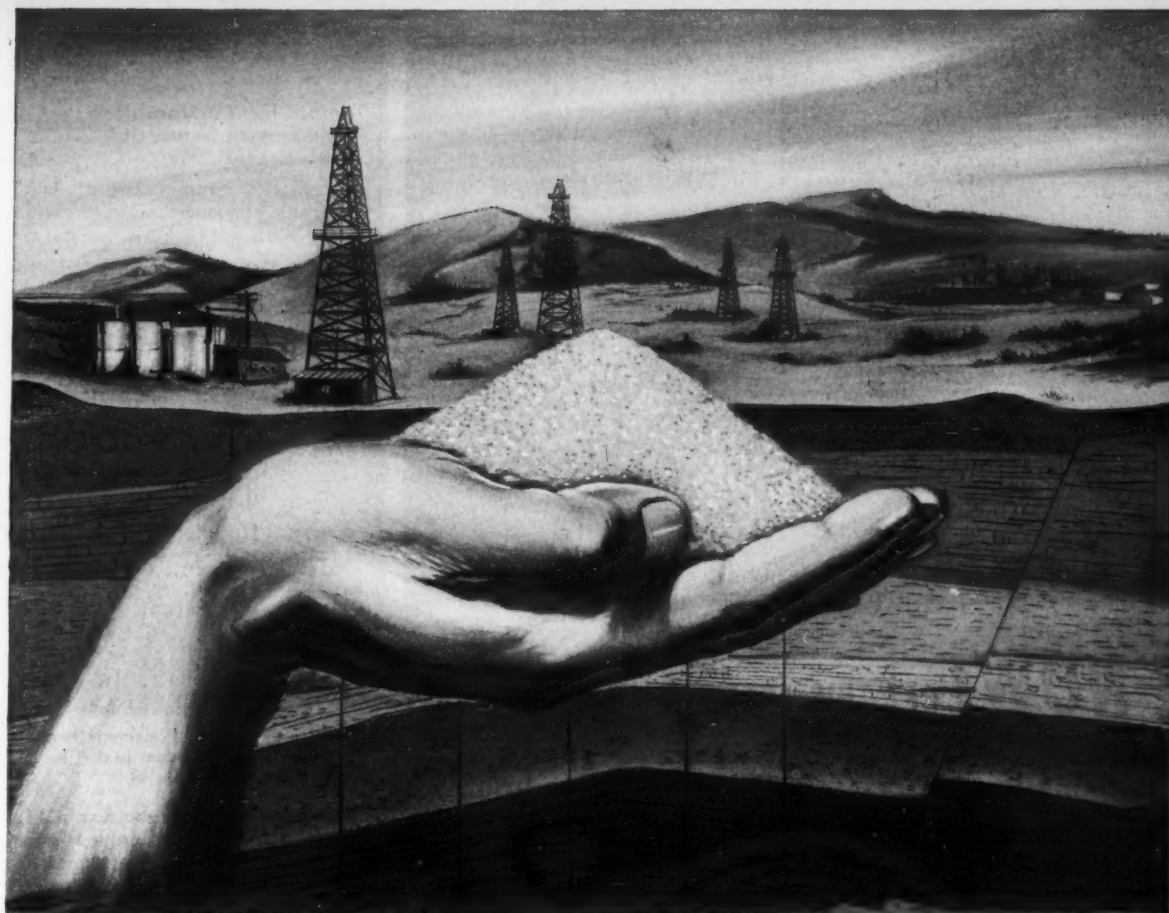
Uses: Enamel may be applied to interior surfaces where mold and mildew conditions exist, including wood, masonry and metal.

Features: Mildew and moisture resistance is reported — excellent, abrasion resistance — very good, and acid and alkali resistance — good. Products incorporate a vehicle that permits application on damp surfaces, particularly those surfaces which are subject to mold and mildew.

Description: Valdura Damp Surface Undercoater and Valdura Damp Surface Enamel use Cunilate as the fungicide. They may be applied by brush or spray and give a coverage of 300 to 400 sq ft/1 gal for the undercoat and 400 to 500 sq ft/1 gal for the enamel.

Under normal conditions the products dry in 12 hr, but more time is required at low temperatures. Seven pastel shades are available, not including white.

(Introduced by American-Marietta Co., Dept. CP, 901 N. Greenwood Ave., Kankakee, Ill. . . . or for more information check CP 6915 on handy form, pages 2 and 3.)



"Lift-up powder" for tired oil wells

How Celite filtration helps boost oil output

To BOOST THE OUTPUT of "tired" oil wells bordering on the limit of economic production, profit-conscious operators inject water under extreme pressure into the porous oil sandstone and force out the accumulated oil. But first, they filter this repressurizing water with Celite® to remove the suspended solids which would eventually clog the microscopic pores of the sandstone, thus blocking the flow of water. *All waters contain at least a trace of these troublesome impurities.*

Celite's ability to do an exceptional filtering job can be attributed to these important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known, Celite is available in nine standard grades—each designed to trap out

suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder received in your initial order. Thus, with Celite, you can count on consistent clarity in your filtrates—at highest rate of flow—month after month, year after year.

The secondary recovery of oil by water flooding is just one of many processes in which Celite has provided the absolute clarity vital to a successful operation. The proper grade of Johns-Manville filter aid will assure you the same results—regardless of the product or process involved. To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 60, N. Y. 16. No cost or obligation.

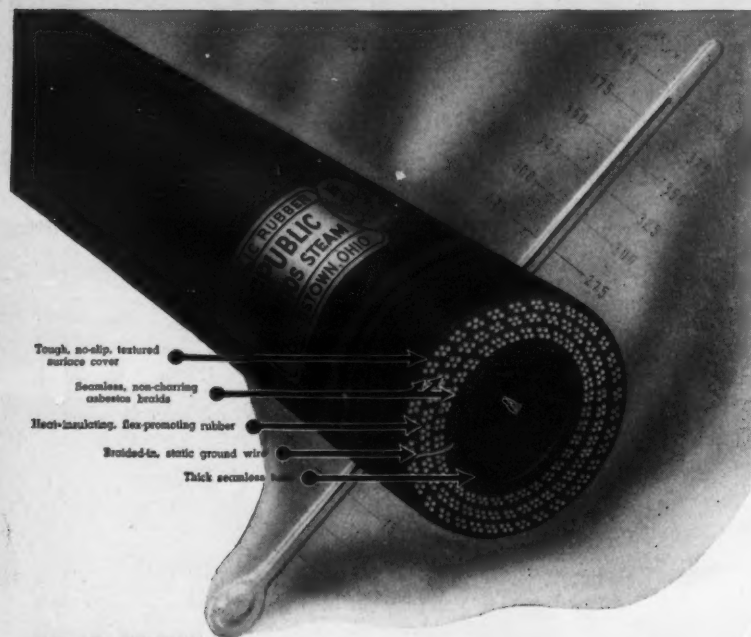
•Reg. U. S. Pat. Off.



Johns-Manville CELITE

FILTER AIDS

When inquiring check CP 6916 on handy form, pgs. 2-3



NOW! GET THIS EXTRA VALUE, SUPER DUTY REPUBLIC ASBESTOS STEAM HOSE

Extra economy through longer service, easier handling, higher, safer working limits!!! Republic Asbestos Steam Hose is a safer high-pressure carrier, a more versatile and longer lasting low-pressure carrier . . . a bonus-built hose for every steam handling requirement! Republic Asbestos Steam Hose is a typical example of how specialized Industrial Rubber Products can save you time and money.



Your local Republic Distributor can help you lick any problem regarding selection, application and maintenance of Industrial Rubber Products. Write today and we'll set up a communication system to keep you posted on developments affecting your business.

Since 1901

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

When inquiring check CP 6917 on handy form, pgs. 2-3

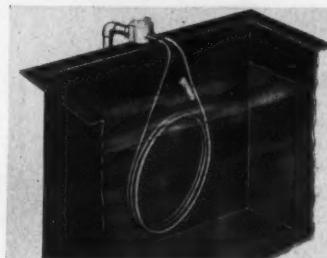
CONSTRUCTION

Smoother electroplating results with immersion bath heater . . .

higher temp obtained with unit also speeds operation

Uses: For electroplating baths, such as those used for Cu and Ni plating, in which the acid employed will not corrode lead sheath.

Features: Increased bath temperature obtained with heater tends to provide more even plating. Since bath is not diluted by steam, operation is faster.



Cutaway view of electroplating bath with immersion heater installed in it

Description: Chromalox CTL lead-sheathed immersion heater is simply hung over side of tank, eliminating expensive installation costs. Being portable, several plating baths can be served by one heater. Since all of heat goes into bath, working conditions are improved because room heat and humidity are lower.

Rated at 5 kw on 230 volts, heater has dimensions of 3 x 16 x 27". Terminals are protected by moisture-tight cast iron housing. Separate thermostatic control is possible for fully automatic temperature regulation.

(Product of Edwin L. Wiegand Co., Dept. CP, 7517 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 6918 on handy form, pages 2 and 3.)

Pictures 15 types of pumps

Four-page bulletin contains pictures and general descriptive matter relating to 15 types of pumps for various industrial applications. Typical applications are listed for each type of unit. Bul G-52 is issued by Marlow Pumps, Dept. CP, Ridgewood, N. J. When inquiring specify CP 6919 on handy form, pages 2 and 3.

STOP VIBRATION and

- Improve Equipment Layout
- Reduce Machine Installation Costs
- Improve Work Quality
- Reduce Maintenance
- Improve Employee Efficiency

Write for your free copy of
Bulletin G-105

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Cleveland, January 19-22. Booth #610

When inquiring check CP 6920 on handy form, pgs. 2-3

LENAPE MANWAYS
and
FITTINGS

**A wide variety
of access openings.**

Lenape elliptical access openings (straight rings or flued and curved saddles) and fittings, of the pressure loaded or "self-energized" type are produced in sizes ranging from 4" x 6" to 18" x 24".

11 x 15" N Fitting.

Typical Lenape Fittings

- 11 x 15" Type L 150 PSI in steel, Everdur, and 304 Stainless.
- 11 x 15" Type N 450 PSI for general application.
- 11 x 15" Type S 250 PSI with external split recessed clamp plate for paper machine dryers
- 12 x 16" Type N 450 PSI for general application.
- 12 x 16" Type HP 800 PSI for heavy duty.
- 14 x 18" 300 PSI Hinged for beverage tanks.
- 18 x 24" 200 PSI for large clean-outs.

Full details are found on pages
35-42 of Lenape Catalog 9-49

LENAPE
HYDRAULIC PRESSING
AND FORGING CO.

LENAPE HYDRAULIC PRESSING & FORGING CO.
DEPT. 100
WEST CHESTER, PA.
RED MAN PRODUCTS

When inquiring check CP 6921 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Pneumatically-balanced valve
needs same operating effort
at 0 or 150 psi . . .**

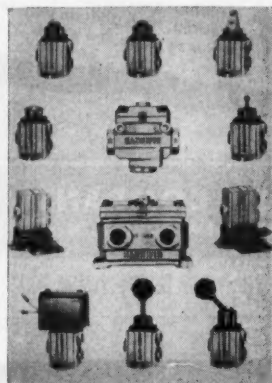
available in hand toggle and foot-operated models, both in locking and non-locking styles

Uses: Units may be used as 2-way or 3-way valves, normally closed to pressure or normally open to pressure. Designed to be used either for direct control of small cylinders and other air-operated devices or for remote control of larger units when installed to control other master valves.

Features: Only effort which operator must overcome to actuate valve is sum of stress of internal return spring and internal friction. In one model this effort is only 5-1/2 lb.

Description: P-M "Pilot-Master" valves, series C, are available in a series of ten units, constructed throughout of oil and corrosion-resistant parts. One

pilot valve can be installed to operate two or more master valves or, in more complicated all-pneumatic circuits where cam-operated pilot valves act like limit switches, there may be several pilot valves operating one master valve.



Pilot valves are available in a wide range of styles

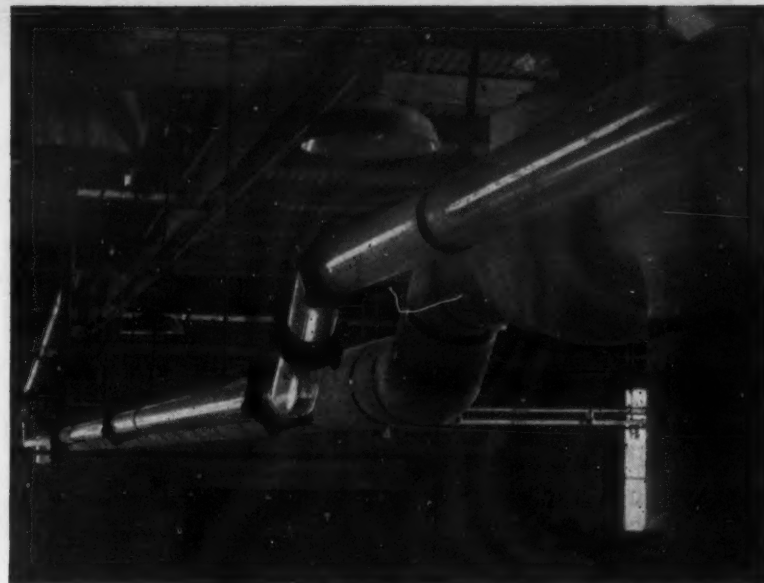
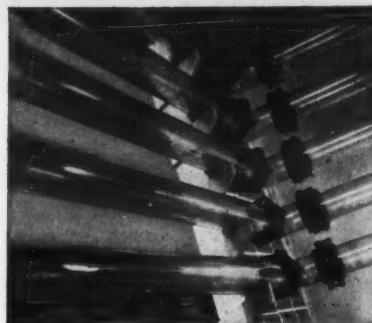
Choice of operating heads range from solenoid head, ball-type, cam-operated head, and palm button head to a piston-type, pressure-operated head. Since units are normally furnished in 1/4" IPS, they can also be used without modification in vacuum service, or they can be ordered drilled and tapped for 3/8" IPS connections where larger pipe or tubing runs are desirable.

(Valves are products of Hannifin Corp., Dept. CP, 1154 S. Kilbourn Ave., Chicago 24, Ill. . . or for more information check CP 6922 on handy form, pages 2 and 3.)

**Methods and equipment
for water softening**

Troubles caused by utilization of hard water and economies effected by curing them are discussed in comprehensive 16-page bulletin. Three basic types of ion-exchange equipment and utilization of these units are described in detail. Enlarged, cutaway photo graphically illustrates details of construction of fully automatic water softener. Accessory equipment for use with softening units is listed.

Typical applications of equipment are included. Bul 2386 is issued by The Permutit Co., Dept. CP, 330 W. 42nd St., New York 36, N. Y. When inquiring specify CP 6923 on handy form, pages 2 and 3.



What to consider IN SELECTING CHEMICAL PLANT PIPING

IN specifying process pipe it is important to give proper weighting to replacement costs, maintenance, ease of cleaning and the visibility of a process. That's why it may pay you to review these facts about PYREX brand "Double-Tough" glass pipe:

Corrosion Resistance—Glass pipe provides corrosion resistance to an extremely wide range of chemicals. It withstands the effects of all acids, except hydrofluoric, and can be used with all but exceptionally strong caustics.

Visibility—Only glass permits you to actually see what is happening—helps you to keep a continuous check on your process.

Ease of Cleaning—The glass-smooth surface of PYREX pipe assures simple rapid cleaning by flushing. There are no truncations or grooves in which deposits can collect to foul the pipe or to contaminate sensitive solutions.

Rapid Assembly—PYREX pipe and fittings are designed for rapid installation even by inexperienced help. Field plumbing kits permit you to make odd lengths right on the job as shown at right above.



Cutting odd length is simple

Low First Cost—The initial cost of PYREX pipe is definitely in line with that of other chemical piping materials—actually lower than most.

Low Replacement Costs—Not only corrosion resistance, but high resistance to both physical and thermal shock contribute to long service life. People respect glass, treat it carefully. Records prove that PYREX pipe is a genuine bargain.

AMONG the biggest and most enthusiastic users of PYREX pipe today are those who tried a small installation "just to see how it would work." Why not you? There is a PYREX pipe distributor near you. He carries the complete line, including all fittings. Corning will gladly send you his name on request: Use the coupon below.

**CORNING GLASS WORKS
Dept. CP-12, Corning, N. Y.**

Please send me the printed information checked below:

- ☐ "PYREX brand "Double-Tough" Glass Pipe and Fittings" (EA-3)
☐ "PYREX brand Glass Pipe in the Process Industries" (EA-1)

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Title _____

Company _____

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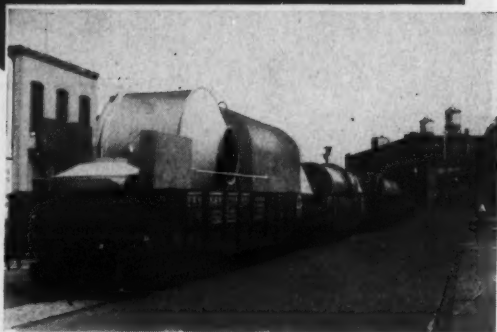
Zone _____ State _____

When inquiring check CP 6924 on handy form, pgs. 2-3

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- Chemicals
- Fertilizers
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- Plastics



Another trainload of Renneburg Low Temperature Dryers

DO YOU HAVE A DRYING PROBLEM? See Renneburg! Pioneers in dryer design for over 75 years, Renneburg manufactures all types and sizes—direct and indirect heat, air and steam, parallel and counter current, tubular and multi-drum. Renneburg design and construction incorporates the finest in quality. Actual tests prove that Renneburg Dryers last longer and dry better at lowest operating cost.

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CONTINUOUS COOKERS, PRESSES, COOLERS, EVAPORATORS • OIL BURNERS • DEODORIZING EQUIPMENT

When inquiring check CP 6925 on handy form, pgs. 2-3



for Your Pipe Lines
or Equipment

Check these Advantages of
**W. S. ROCKWELL
Butterfly Valves**

- ★ Minimum pressure drop — when fully open, valve practically as free as pipe itself.
- ★ Uniform, quick control manually or automatically.
- ★ Positive shut off—commercial, drip tight or air tight.
- ★ Pressures to 600 p.s.i. Temperatures to 2000° F.
- ★ Made of any metal or rubber-lined.
- ★ Sizes—1" to 72" and larger.

Write for Valve Catalog

W. S. ROCKWELL COMPANY

BUTTERFLY VALVES • SLIDE VALVES • AUTOMATIC VALVES

2203 Elliot Street • Fairfield, Conn.

Sales Representatives in Principal Cities

When inquiring check CP 6926 on handy form, pgs. 2-3

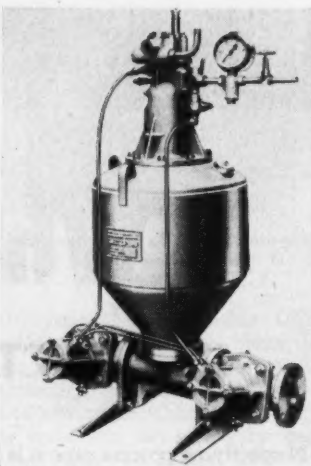
CONSTRUCTION

**Pneumatic pump has
no reciprocating or
rotating parts . . .**

operates from any compressed
air supply line

Uses: For pumping glucose, glycerine, latex paints, lacquers, varnishes, oils, flammable solvents, sandy water, and similar liquids containing abrasives.

Features: Since pump is self-priming, it can be operated above level of liquid to be pumped. Pump has no bearings, glands, revolving shafts, rotating or reciprocating parts.



Pneumatic pump is serviceable
for flammable liquids, since it
has no electrical connections

Description: Ejectopump operates automatically when connected to any compressed air supply line. It pumps liquids in series of regular suction and discharge strokes. With 30 to 50 psi air supply, it will deal with discharge heads up to 50'. Normal max suction is 10', but 20' suction can be accomplished with special ejector.

Pump requires no lubrication whatever. Pump casing is never completely emptied during normal operation and no air passes into delivery pipe. Therefore, it's impossible for aeration to take place. Pump has no electrical connections, which eliminates possibility of igniting flammable liquids.

Ejectopump consists of cylindrical casing, a float, two return valves (contacting liquid), and a header (not contacting liquid) mounted above casing. Header unit houses pneumatic valves and air-operated ejector, which functions only dur-



PUBLISHED IN THE INTEREST OF BETTER VACUUM PROCESSING

VOL. 7

BEACH-RUSS COMPANY

NO. 1

IZZAT 807

The New RP Catalog

THE TECHNIQUE OF
VACUUM IMPREGNATION



high efficiency pumps for the air in the vacuum range.

It also covers the most recent high vacuum in modern industry.

No page of this catalog is for

Naval High Altitude

The Office of Naval Research, U.S. Navy, of the various high altitude tests made more extensive negative pressure Type RP Rotary Piston Vacuum Pump

part in the research program.

If you are interested in any phase of vacuum work, write to Beach-Russ Co., 46 Church Street, New York 7, N. Y.

This cover contains detailed information for the Altitude Test Chamber and every.

High Vacuum for Anti

When the previous stage is reached of the established and used, developed vacuum is a stable, superior factor, and govern conditions for high rates of production for impregnation and dry impregnation to the smaller materials needed. The notable performance of Type RP Pump, has been all operating costs, have led to its continued employment in the plants of the largest of industries.

Also see other Type RP High Vacuum Pump and its use in vacuum impregnation, chemical processing.

Here's the latest edition of "Much Ado About Nothing." It covers the important and interesting technique of vacuum impregnation, including practical data on not only the impregnation of electrical structures and of metal castings, but other applications of the operation of applying negative pressure to an object or material and then saturating it with another substance.

Just write and ask for your copy of this edition. If you want back issues . . . Vol. 1, No. 2, on central station vacuum systems, and Vol. 2, No. 1, on chamber evacuation for instrument testing, high altitude tests, etc. . . . tell us so when you write.

BEACH-RUSS COMPANY

46 CHURCH STREET • NEW YORK 7, N. Y.

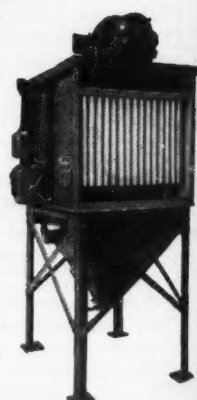
When inquiring check CP 6927 on handy form, pgs. 2-3



**STOP DUST
AT ITS SOURCE**

... with Pangborn
Unit Dust Collectors

If concentrated dust hampers your production, install this Pangborn "CL" industrial type Unit Dust Collector right at the source of dust! It's delivered factory assembled, ready to use. Has non-sag, individually removable screen frames, motor-driven screen shaker—all-metal construction (except filter cloths). Models available with cloth area from 180 to 820 sq. ft. Write for Bulletin 912 to: PANGBORN CORPORATION, 2700 Pangborn Blvd., Hagerstown, Maryland.



Look to Pangborn for the latest developments in Dust Control and Blast Cleaning equipment.

Pangborn

Type "CL" Collector with side removed, showing bank of screens.

DUST CONTROL

stops the dust hog from stealing profits

When inquiring check CP 6928 on handy form, pgs. 2-3

CHEMICAL PROCESSING

ing suction stroke. Rate of air admission to casing during delivery stroke is adjustable, and output can be controlled to any desired rate.

Pumps may be constructed of mild steel, ferrous metals, monel, stainless, or inconel according to requirements. They are available in 1½, 2, 3, 4, and 6" sizes.

(Ejectopump is product of Gresham and Craven, Ltd., Great Britain, and is distributed by Ferro Corporation, Dept., CP, Cleveland, Ohio . . . or for more information check CP 6929 on handy form, pages 2 and 3.)

Aluminum alloy construction makes three-lamp overhead unit lighter, flexible . . .

allows individual control of each light or combination mercury vapor-incandescent luminaires

Uses: Designed for use with reflector lamp assemblies as well as conventional luminaires, 3-lamp cluster is suitable for applications in industrial plants, foundries, etc.

Features: Lightweight aluminum alloy construction of unit makes possible the use of either combination circuits with individual control of each light, or combination mercury vapor-incandescent luminaires.

Description: Designated AL-8700, suspension device will support three luminaires weighing up to 10 lb each. Three ½" pipe-size tubes are used to support the fixtures. These tubes, threaded at fix-



Can be controlled individually or in combination

ture connection end, are slip-fit and locked by means of set screws in side hubs spaced 120° apart on the junction box. Top hub of junction box has a ¾" female pipe thread connection and locking set screw.

When used with manufacturer's 4-pole (3-way 4-wire) disconnecting and lowering hanger, unit can be lowered to the floor quickly and easily for servicing. Cluster can also be used with manufacturer's 2-pole hangers for applications involving incandescent lights connected in parallel.

(Development of The Thompson Electric Co., Dept. CP, 1188 Power Ave., Cleveland 14, Ohio . . . or for more information check CP 6930 on handy form, pages 2 and 3.)

**NO SIZE TOO
LARGE...
NO SERVICE TOO
TOUGH...**



**BAH! THIS
'KARBATE'
EQUIPMENT IS NOT
FOR ME!**

DOLLARS and SENSE

... point to "Eveready" No. 1050 Industrial Flashlight Batteries . . . the cells that deliver *twice as much* usable light as any battery we've ever made before. Their unique construction prevents swelling or jamming in the case . . . has no metal can to leak or corrode.



The terms "Karbate" and "Eveready" are registered trade-marks of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

IN CANADA: National Carbon Limited, Montreal, Toronto, Winnipeg

OTHER NATIONAL CARBON PRODUCTS

HEAT EXCHANGERS • PUMPS • VALVES • PIPING • TOWERS • TOWER PACKING • SULPHURIC ACID CUTTERS
HYDROCHLORIC ACID ABSORBERS • STRUCTURAL CARBON • BUBBLE CAPS • BRICK • GRAPHITE ANODES • BRUSHES

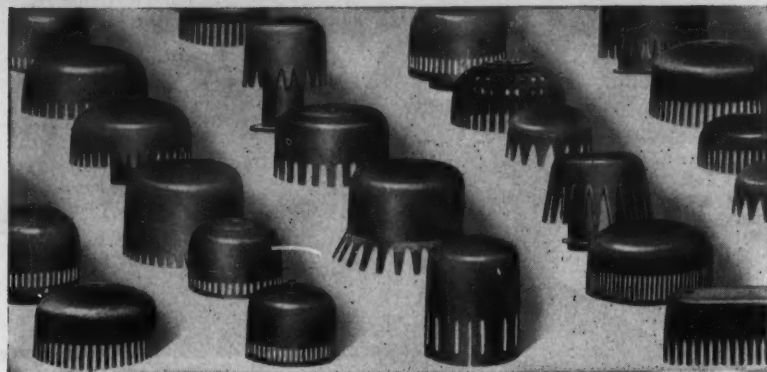
for
"KARBATE"
BRAND
HEAT EXCHANGERS

SIZE. There is virtually no limit to the amount of heat-transfer surface obtainable in "Karbate" impervious graphite shell-and-tube-type heat exchangers. Large capacity requirements are readily met, either by a combination of standard Series 310A and 90A "Karbate" heat exchangers or with special units manufactured by the country's leading producers of heat exchange equipment.

SERVICE. There's ample evidence that "Karbate" heat exchangers already occupy an important place in practically every type of severely corrosive service. For example, among suppliers of heat-transfer equipment for the process industries, there are 57 manufacturers and service organizations who now depend on "Karbate" impervious graphite equipment to solve their customers' toughest corrosion problems!

Write for Catalog Section S-6740—
New Standard "Karbate" Heat Exchangers

When inquiring check CP 6931 on handy form, pgs. 2-3



SEND FOR PSC BUBBLE CAP BULLETIN 21

Largest Compilation of Engineering Data.

Lists 200 Styles Furnished Without Die Cost.

This standard reference contains complete specification information for over 200 standard styles of bubble caps and risers. Also drawings for use in determining methods of tray assembly. All styles list-

ed in Bulletin 21 are furnished promptly, without die cost, and in any alloy to meet your coking or corrosion problems. Special caps gladly designed; write as to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.



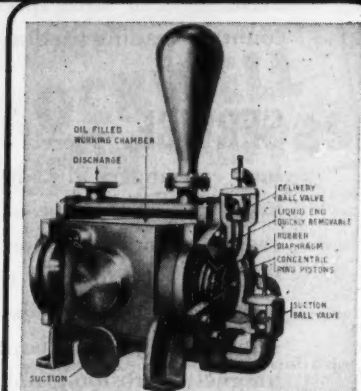
Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 6932 on handy form, pgs. 2-3

Your Best Bet for Those Tough-to-Pump Materials

- ✓ POSITIVE DOUBLE ACTING
- ✓ NO PACKINGS • NO LEAKAGE
- ✓ NO CONTACT BETWEEN
FLUID HANDLED AND
WORKING PARTS
- ✓ EASY TO CLEAN
- ✓ LOW COST MAINTENANCE
- ✓ MADE OF ANY MATERIAL
- ✓ AMPLE PRESSURE

Here's the ideal pump for corrosive, abrasive, viscous, thick, heavy, delicate or hazardous materials or fluids which clog or build up on pump parts. Economical—low maintenance—truly the pump that "can take it."



Details of one liquid end. Mechanical parts are completely separated from the fluid handled by rubber diaphragms.

Write for Bulletin 126

Shriver Diaphragm Pumps

T. SHRIVER & COMPANY, Inc., 846 Hamilton Street, Harrison, N. J.

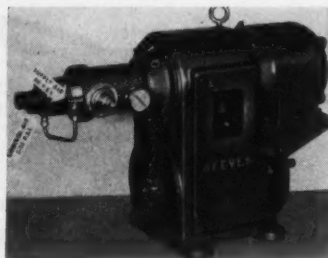
When inquiring check CP 6933 on handy form, pgs. 2-3

CONSTRUCTION

Add automatic controls to variable speed motors . . .

extends range of application

Addition of Conoflow automatic controls permits use of manufacturer's variable speed motor drives to control liquid levels in tanks (either open or enclosed types).



Arrows at left indicate locations on Conoflow control for supply air (top arrow) and for control air

They may also be used to automatically control pressure, temperature, and flow proportioning systems of liquid, gas, chemicals, etc.

Control is available on integral horsepower motors for use in conjunction with instrumentation air pressures of 3-15 psi. With this control the variable speed motor drives have six to one maximum speed ranges on all units rated up to 25 hp.

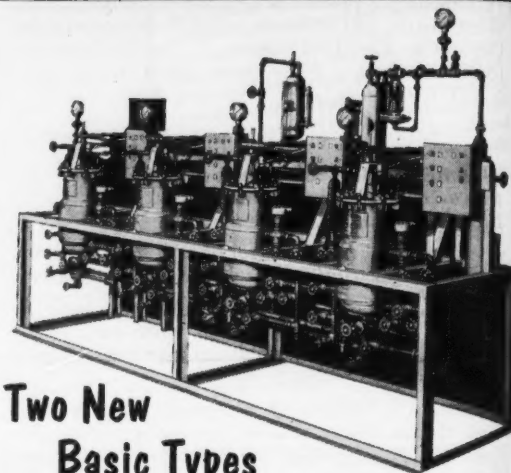
Connection is made directly to Conoflow cylinder on the drive from a pneumatic controller. Cylinder is pre-lubricated, requiring no outside lubrication. Control may be operated from present air supply in plant and is easily connected to any pneumatic control instrument.

(Product of Reeves Pulley Company, Dept. CP, Columbus, Ind. . . . or for more information check CP 6934 on form, pgs. 2 & 3.)

Illustrates features of vacuum filters

Complete line of vacuum filters is described and illustrated in 8-page booklet. Photographs, technical data, drawings, and dimensional information give outline of features and specifications of various ceramic units. Bul 37 is issued by The U. S. Stoneware Co., Dept. CP, Akron 9, Ohio. When inquiring specify CP 6935 on handy form, pages 2 and 3.

AND "Access-a-bilt" VAT FERMENTORS



Two New Basic Types

● The addition of the "ACCESS-A-BILT" fermentor to our line of "CERTIFIED" vat fermentors now enables us to fully equip all laboratories, universities, research foundations and industry with research, pilot and production fermentors with practically any desired features.

These units have extreme flexibility, and versatility. They permit accurate and precise operation and observation. Fermentation temperature may be controlled to within .25° C. Complete sterilization is quick and positive. Variable pressure range, from zero to 50 pounds. Stirring rates and propeller pitch accurately controlled. Multiple units allow simultaneous study of multiple experiments or variables. Antifoam adding mechanism adjustable for adding minute quantities of antifoam on demand or at timed intervals.

These versatile and advanced types of fermentors provide the alert, progressive and visionary bioengineer with a completely flexible tool for carrying on the most advanced type of fermentation experiments or production.

Write for free detailed information which will be promptly mailed.

STAINLESS & STEEL PRODUCTS CO.

1000 BERRY AVENUE • ST. PAUL 4, MINNESOTA

Edward W. Weiler, Eastern Sales Representative
724 Fifth Avenue, New York 19, New York

When inquiring check CP 6936 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Vinyl plastic bonded to itself and to other materials with adhesive . . .

bonding does not require heat, pressure, or special surface preparation

Uses: To bond vinyl plastics to themselves and to wood, metal, glass, acrylic plastics, cloth, and other substances.

Features: Adhesives are easily applied and don't require heat, pressure, or special surface preparation.

Description: The three cements are intended for specific set of conditions and ingredients have been formulated to produce quick penetration of surface and fast initial tack or bond. CD Cement 201 contains several strong solvents and penetrants and was developed specifically for bonding vinyl film to itself. Although fast acting, material produces minimum of curl on thin film in addition to providing a strong bond between vinyl films.

CD 202 is slightly viscous adhesive also designed to bond vinyl film to itself. Quick initial bond emphasizes its value where fast assembly is essential or for use on rough, poorly mated surfaces. Solvent ratio is similar to 201 but it contains proper ratio of resins, plasticizers, and other ingredients.

CD 203 is versatile substance for bonding vinyl plastics to metal, glass, paper, leather, and other surfaces. It produces quick initial bond and is fast setting. Bodied adhesive contains vinyl resins, plasticizers, tackifiers, stabilizers, and other ingredients. Application may be by brush or machine.

(Cements are products of Chemical Development Corporation, Dept. CP, Danvers, Mass. . . . or for more information check CP 6937 on handy form, pages 2 and 3.)

Any stream of air, gas, salt water or mild chemicals is divided by recirculating valve . . .

tests show small pressure drop and full pipe orifice flow characteristics in 2" size

Recirculating valve may be used for any stream dividing application of gases, air, salt water, oil or mild chemicals in pressures up to 125 psi. Design of valve incorporates time proven plug valve principles and O-ring sealing. It is reported that leak-proof condition is obtained and that handle loads plus internal wear are reduced to minimum by use of externally adjustable spring seating control, which features multiple ball pressure contact against hardened wear ring.

Manufacturer's tests indicate that valve performs with minimum pressure drop and full pipe orifice flow characteristics in 2" size, now being produced. Valve is available in cast aluminum, steel or Navy bronze. Latter two models are cadmium plated throughout. Flange connections are available for either male or female thread adaptation.

(Product of Ardee Manufacturing Co., Dept. CP, 840 N. Seward St., Los Angeles 38, Calif. . . . or for more information check CP 6938 on handy form, pages 2 and 3.)

NEW...TEFLOI* BELLOWS CONNECTOR

- CORROSION RESISTANT
- HEAT RESISTANT
- ELECTRICALLY NON-CONDUCTIVE
- FLEXIBLE EVEN AT MINUS 94° F.
- CHEMICALLY INERT
- NON-ABSORBENT



The answer to difficult piping problems in your plant

Here is the new "JOHN CRANE" Teflon Bellows Type Connector which will solve many problems in the chemical industry. Fabricated of chemically inert Teflon, it economically serves as a vibration dampener as well as an expansion joint—connects misaligned couplings. The unusual properties of Teflon allow the expansion joint to be flexed repeatedly without damage.



Maximum expansion and contraction provided.



French-type gasket provides easy installation.



Withstands repeated flexing without damage.

End flanges of the joint are actually French-type envelope gaskets made integral with the joint for simple assembly between companion flanges . . . insures a tight, leak-proof seal on installations. John Crane Bellows Connectors are made to your specifications in a wide range of sizes to fit your particular needs.

Consult with "JOHN CRANE" engineers now on the uses of remarkable new Teflon in effectively handling corrosive liquids and gases.

Write for informative catalog on Teflon and its applications.



*DuPont Trademark for tetrafluoroethylene resin



CRANE PACKING COMPANY

1821 CUYLER AVENUE • CHICAGO 13, ILLINOIS

Offices in All Principal Cities in United States and Canada



When inquiring check CP 6939 on handy form, pgs. 2-3

Centrifuge Chewing Gum?



...and one of the tougher problems that has been solved successfully by the Sharples Super Centrifuge.

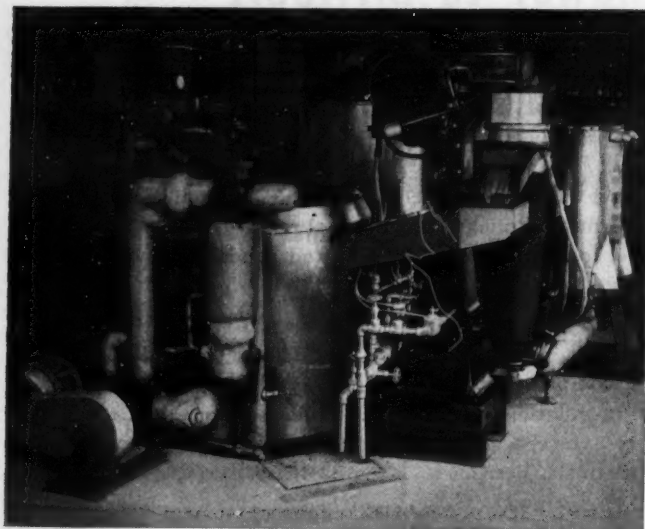
We mention the centrifugal clarification of molten chicle not only because of the highly viscous nature of chicle, and the cleanliness with which it must be processed—but for quite another reason:

A series of test runs made on a standard Sharples Super Centrifuge determined the design features necessary to handle this material that is difficult to transfer even through pipe lines. A new rotating element was engineered; new methods of introducing the chicle into this element were developed; radical changes in discharge covers were required; the frame was steam jacketed and special power requirements were detailed.

Solving the chicle problem represents the kind of centrifugal engineering for which the Sharples Corporation is well known and on which you can depend.

Added to the seven basic types of Sharples Centrifuges is the engineering ability and long experience of an organization skilled in the most effective application of one of these centrifuge types to your specific need.

Courtesy of American Chicle Company



SHARPLES



THE SHARPLES CORPORATION • 2300 WESTMORELAND STREET, PHILADELPHIA 40, PENNA.
NEW YORK • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO • NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON

Associated Companies and Representatives throughout the World

When inquiring check CP 6940 on handy form, pgs. 2-3

Catalog contains complete info on electronic components

Fully illustrated and indexed catalog contains information on 470 items which have been added to manufacturer's regular listing of electronic components. Complete line of volume controls, switches, ceramic capacitors, printed electronic circuits, and steatite insulators is described and pictured.

Recently added line of miniature ceramic rotary switches, listing of disc capacitors with molded insulation, expanded and improved control lines, and capacitor items are featured. Numerous specification tables, charts, and photos are included in thirty-two-page catalog.

Cat 28 is issued by Centralab, Div. of Globe-Union Inc., Dept. CP, 900 E. Keefe Ave., Milwaukee 1, Wis. When inquiring specify CP 6941 on handy form, pages 2 and 3.

Specifications, features of regulating valves

Four-page bulletin outlines specifications of double-seated, slip-stem regulating valves. In addition to covering size, construction, and mounting of straight-through and angle-type positions for either lever-and-weight or lever-and-float operators, booklet contains tables which deal with body specifications, temperature-pressure ratings, and other pertinent information.

Bul 422 is issued by Station 64, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6942 on handy form, pages 2 and 3.

Reviews regional trends, factors in newsprint supply-demand

Recent study, published by recognized research organization, analyzes various factors and trends in newsprint supply-demand situation in western region of the United States and Canada. Forecasts of probable future situation are made for the coming decade.

According to the study, consumption and production of newsprint in the region are expected to rise more than one-third above the present rate within the next ten years. Study also deals with economics involved in establishing a new, large newsprint mill to supply the region. No recommendations are made concerning the mill, but economics and disadvantages are analyzed in considerable detail.

To obtain "The Newsprint Situation in the Western Region of North America" remit \$10 direct to Project 464, Stanford Research Institute, Dept. CP, Stanford, Calif. When inquiring specify CP 6943 on handy form, pages 2 and 3.

Bulletin presents case history of private telephone system

How an oil-producing and processing company uses its own private business telephone network to bring increased efficiency and close control to its operations is described in twelve-page illustrated booklet.

Photos, diagrams, and accompanying text outline details of installations, operation, and advantages of company-owned telephone system. Bul 1760 is issued by Automatic Electric Co., Dept. CP, 1033 W. Van Buren St., Chicago 7, Ill. When inquiring specify CP 6944 on handy form, pages 2 and 3.

Bulletins describe features of maintenance materials

Four concise bulletins outline advantages and uses of four different materials designed for use in industrial maintenance operations. Bulletin entitled "Instant-use" deals with compound which may be used to patch floors while traffic continues to roll. May be used to repair concrete, brick, stone, or asphalt floors. Booklet designated "Ruggedwear" describes compound designed to be used as floor patch and resurfacer for heavy industry.

A heavy-duty floor resurfacer designed to resist the attack of acids, alkalis, water, oil, and grease is described in four-page bulletin, "Rockflux". Another four-page bulletin, "Trowel-in," deals with floor patching material which can be kept on hand, ready for immediate use in any of a number of floor deterioration problems. Compound both repairs and resurfaces floors of practically any composition. Repairs are ready for traffic in 18 hours.

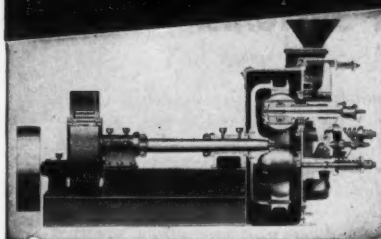
Bulletins are issued by Flexrock Co., Dept. CP, 36th and Filbert Sts., Philadelphia 4, Pa. When inquiring specify CP 6945 on handy form, pages 2 and 3.

Vapor pressure-temp relation operates dial thermometers

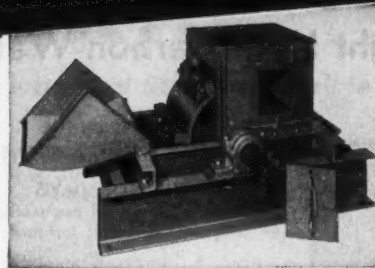
Operating principle of line of dial thermometers described in 30-page catalog is function of vapor pressure in pressure-tight system as related to temperature. Pressure changes of vapor system in thermometer are communicated to geared movement which, in turn, operates the indicating pointer on the face of the dial. Characteristic behavior of liquids as temperatures are increased results in changes which permit extremely close reading of critical upper portion of dial scale.

Complete specifications, descriptive matter, line drawings, dimensional data, and features are included for every type of thermometer listed in catalog. Cat 76-T is issued by Marsh Instrument Co., Dept. CP, Skokie, Ill. When inquiring specify CP 6946 on handy form, pages 2 and 3.

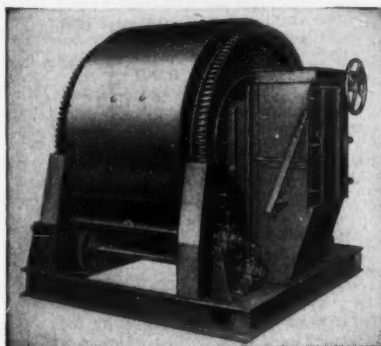
Step-up Production Lower Preparation Costs with STURTEVANT EQUIPMENT



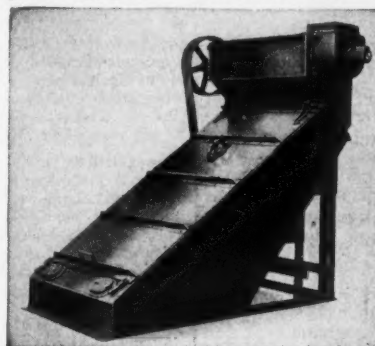
RING ROLL MILL — for medium and fine reduction of hard or soft materials (10 to 200 mesh). Open-door accessibility for easy cleaning. Available in many sizes and capacities.



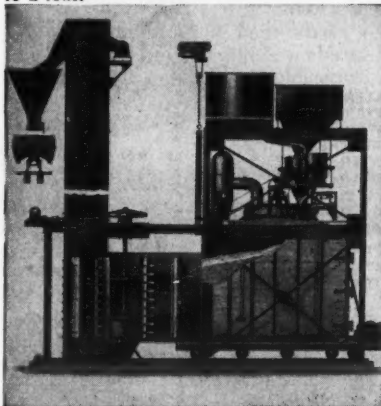
TAILINGS ROTARY PULVERIZER — increases output of fertilizer tailings . . . will not clog . . . leaves no daily accumulation of unground pellets. Capacities up to 25 tons per hour.



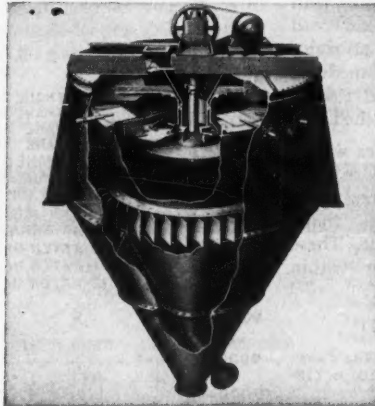
DRY BATCH MIXERS — 4-way mixing action mixes two or more ingredients into an inseparable, homogeneous mass. Open door accessibility makes cleaning easy. Capacities 1/4 ton to 2 tons.



MOTO-VIBRO SCREENS — screen everything screenable. Open and closed models with or without feeders. Many types and sizes . . . screens from 1/2" to 60 mesh.



DEN AND EXCAVATOR — speeds processing of superphosphates. Easily operated by two men . . . produces 16 to 40 tons per batch and up to 480 tons per day of superior fertilizer free from lumps.



AIR SEPARATOR — for finest separation of materials. Capacities from 1/4 ton to 50 tons per hour in fineness of 40 to 325 mesh and finer. Increases production of fines, cuts power consumption costs.

Sturtevant Processing Equipment . . . Grinders, mixers, separators, screens, etc. . . can help you reduce today's high manufacturing costs by increasing both machine and operator output, lowering production costs, assuring high quality products.

Records in all types of industries — chemical, plastics, ceramics, cement, food, construction — prove that this equipment works dependably day in, day out with little, if any, maintenance.

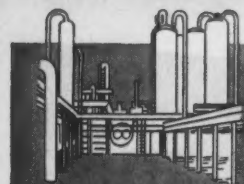
Used individually or linked together in proper sequence, they do the job faster and easier than other types . . . handle a larger variety of work.

It will pay you to investigate Sturtevant Processing Equipment for your plant. There is a size and type of machine that will meet your requirements. Write for information.

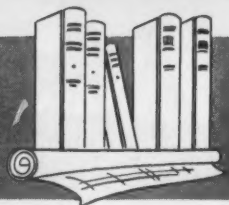
STURTEVANT MILL COMPANY

119 CLAYTON STREET
BOSTON 22, MASSACHUSETTS
Designers and Manufacturers of:
CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS
and EXCAVATORS • ELEVATORS
MIXERS

When inquiring check CP 6947 on handy form, pgs. 2-3



Processing and Engineering Data



Nomograph for Mutual Solubilities of Light Hydrocarbon-Water Systems

By GEORGE E. MAPSTONE

Edited by D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

DATA on mutual solubilities of light hydrocarbon-water systems are useful in studying behaviour of petroleum products in contact with water. They have been reported by a number of investigators.¹

Data presented here cover methane, ethane, propane, and n-butane with water at pressures from 1000 to 10,000 psia.

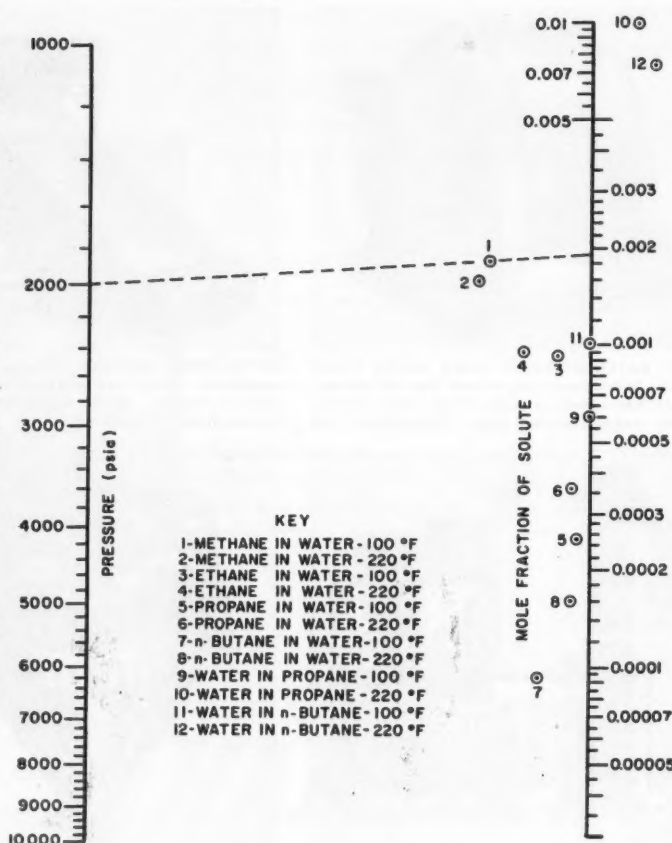
Typical Example

What is the solubility of methane in water at 100°F at a pressure of 2000 psia? From the Key (see nomograph) note that point 1 is the reference for methane in water at 100°F. Connect this point with 2000 on pressure scale and read Mole Fraction of 0.0019 at right. Under these conditions methane will dissolve in water until a mole fraction of 0.0019 is reached.

NOTE: Chart yields values within one per cent of smoothed original data for propane and butane. Maximum discrepancies with methane and ethane are five per cent. These differences appear to be within accuracy of original data.

LITERATURE CITED

¹BROOKS, GIBBS, and MCKETTA, *Petroleum Refiner*, Vol. 30, No. 10, p 118-120 (1951)



**faster
cleaning**
For
**STAINLESS STEEL
EQUIPMENT**

If quick cleaning is one of the factors that determines your use of stainless steel processing equipment, remember this:

A STAINLESS STEEL VESSEL WITH ROUND CORNERS CLEANS FASTER—MORE THOROUGHLY—THAN ONE WITH SQUARE CORNERS. Whether you clean with brush or cloth—you can "get at" all the surfaces of a round-cornered vessel easily. There are no corners in which residue can hide.

Having worked exclusively with stainless steel and alloys for many years, we have developed to a high degree the techniques needed to fabricate processing equipment with round corners.

Using tools and dies of our own design, we build your vessels so that cleaning time in your plant is cut to a minimum. Result: your stainless steel equipment costs less to operate and lasts longer. Consult with us.

S. Blickman, Inc., 712 Gregory Ave., Weehawken, N.J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

SEND FOR THIS
VALUABLE BOOK
A request on your letter-
head will bring our
guide, "What to Look
For When You Specify
Stainless Steel for Your
Processing Equipment."



When inquiring check CP 6948 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Detail drawings of crushers, feeders, and power units

Fourteen-page bulletin contains complete information and drawings which give specifications and construction of crushers, screens, washers, feeders, and power units. Convenient charts summarize specifications of individual units. Eight detailed drawings show construction of integrated units set up for operation mounted on common skid.

Bul 632 is issued by Pioneer Engineering Works, Inc., Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. When inquiring specify CP 6949 on handy form, pages 2 and 3.

Phone systems use current generated by user's voice

Multi-service intercommunication systems and phone systems use current generated by user's voice to transmit the voice itself. Systems require no outside power, no batteries. Instruments follow standard telephone design, with heavy-duty construction and corrosion-resistant parts.

Six-page bulletin discusses features, advantages, and operation of complete line of equipment. Bul SA-25 is issued by The Wheeler Insulated Wire Co., Div. of The Sperry Corp., Dept. CP, Waterbury 20, Conn. When inquiring specify CP 6950 on handy form, pages 2 and 3.

Explains, defines systems for electronic control

An electronic system designed to provide a means of transmitting and receiving signals corresponding to system conditions in manufacturing operations is described and defined in four-page bulletin. Booklet also discusses typical applications of units, especially in water and sewage fields.

Photos and line drawings show principles and typical applications of systems. "The Autocon Rambler" Vol 4, No. 2 is issued by Automatic Control Co., Dept. CP, 1005 University Ave., St. Paul 4, Minn. When inquiring specify CP 6951 on handy form, pages 2 and 3.

Bulletin tells complete story of compressors, condensers

Eight-page descriptive bulletin contains complete information on hermetically-sealed refrigeration compressors and condensing units of 75 to 100-hp capacity. Motors, valves, pistons, crank shafts, bearings, and other small parts are discussed in detail. Brief table of specifications gives technical data on two sizes of compressors. Standard electrical characteristics are included.

Bul DB 101-160 is issued by Westinghouse Electric Corp., Sturtevant Div., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 6952 on handy form, pages 2 and 3.

If you've never used this—

maybe you should It's UNIFLEX...

The new Helically-corrugated Seamless Flexible Tube

If you have a process or application involving flexible metal hose, it will pay you to know a few facts about UNIFLEX. For this entirely new, *seamless* flexible tubing is just coming into its own—in applications too critical for ordinary concentric tubing.

Consider . . .

1. We make UNIFLEX from seamless, special bronze alloy tube—tough, corrosion-resistant, leak-proof.

2. Helical corrugations give UNIFLEX greater flexibility and longer life. Our unique method of manufacture eliminates embrittlement resulting from excessive work-hardening.

3. For leakless service, UNIFLEX fittings have metal-to-metal seat. Seal is produced through spring washer effect of hose on fitting body.

4. Unlike conventional split-ring collars used on concentric tubing, the *one-piece* UNIFLEX collar hugs 4 or 5 convolutions. This means far less wear—and much greater strength in the connection.

5. UNIFLEX is encased in high-tensile bronze wire braid attached to specially designed couplings. Hose is relieved of damaging strains; sheath prevents elongation, gives extra safety, withstands abrasion.

6. UNIFLEX helical construction distributes flexing between inner and outer surfaces of convolutions—eliminates strain usually limited to one groove. Result: Greater safety and longer life.

7. UNIFLEX fittings are shorter and more compact than most others. This permits the use of more hose length and less fitting length—gives far greater maneuverability, makes it easier to get in and out of tight places.

UNIFLEX is supplied in measured lengths, properly fitted and ready for use. You can buy it in sizes from $\frac{1}{4}$ " to 6" ID. It has already proved itself in such applications as hydraulic lines, oil burners, refrigeration machinery, air conditioning equipment, pumps, compressors, diesel engines and machine tools. Our Designers and Engineers have a thorough knowledge of its behavior under exacting conditions. If you'd like to know what UNIFLEX can do for you write us about your problem. We'll be glad to help you—without obligation.



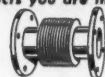
Send for your free copy of our new UNIFLEX Catalog. It contains full technical data, sizes, fittings, suggestions for use, and information about new UNIFLEX Quick-soldered Couplings.

Let Our Family of Products Help Yours

✓ Check products you are interested in.



☐ SEAMED AND SEAMLESS METAL HOSE



☐ PRECISION BELLWS



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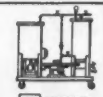
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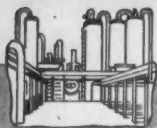
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When inquiring check CP 6953 on handy form, pgs. 2-3



Calculation of Equivalent Length of Fittings

Part I — Threaded Fittings

By JACQUES R. LAPOINTE
Pittsburgh Coke & Chemical Company

Edited By D. S. DAVIS
Professor of Chemical Engineering, Virginia Polytechnic Institute

Nomographs given here are designed to find equivalent length of fittings in a system where a large number of fittings are used — use of nomographs with a small number of fittings gives approximate answers.

WHEREVER calculations of pressure drop through a piping system are made, the problem of equivalent length of fittings makes its appearance. In especially complex piping systems, calculation of equivalent lengths may take as long or longer than calculation of the pressure drop itself.

Nomographs given here are designed for arriving at a quick total of equivalent lengths of fittings in terms of feet of schedule 40 pipe. These nomographs can be used with threaded fittings listed below. (Similar nomographs for welded, miter, and socket-welded fittings will appear in the Processing and Engineering Data Section of a future issue of CHEMICAL PROCESSING.)

In checking equivalent lengths of fittings in a system, fittings are first grouped according to the particular

nomograph which applies to them. Thus Tees, Return bends, and all Elbows constitute one group, all Valves constitute another. Each group is then subdivided into fittings having the same nominal diameter.

"Calculation" is made by starting at left of Nomograph with Tees and Return bends, for example, (see Fig 1). Number of these with one diameter are connected to the number of 90° Elbows of the same diameter to locate a point on reference line. This point is connected, in turn, to the number of 45° Elbows at far right to locate a point on the L_e/D scale. Finally, the L_e/D point is connected to the common diameter on diagonal of the "Z-chart" and equivalent length of the sum of fittings is read directly as feet of schedule 40 pipe on the L_e scale.

Typical Examples

A piping system of 6-inch Schedule 40 pipe has the following threaded fittings: 4 tees, 2 180°-close return bends, 5 90°-elbows, and 3 45°-elbows. What equivalent length of pipe do they represent? Solution on Fig 2 shows they are equivalent to 263 feet of pipe.

What equivalent length of pipe (6-inch) would be added if 4 gate valves and 10 swing check valves were added to the system? (Note — use a value of 0 globe valves and half the actual number of swing check valves.) Solution shown on Fig 3 determines that an equivalent of 879 feet of pipe would be added.

Fittings to which Nomographs Apply

Elbow, 45°	Valves, angle
Elbows, 90°	Valves, gate
Bends, 180° close return	Valves, globe
Tees	

KEY FOR NOMOGRAPHS
THREADED FITTINGS & VALVES

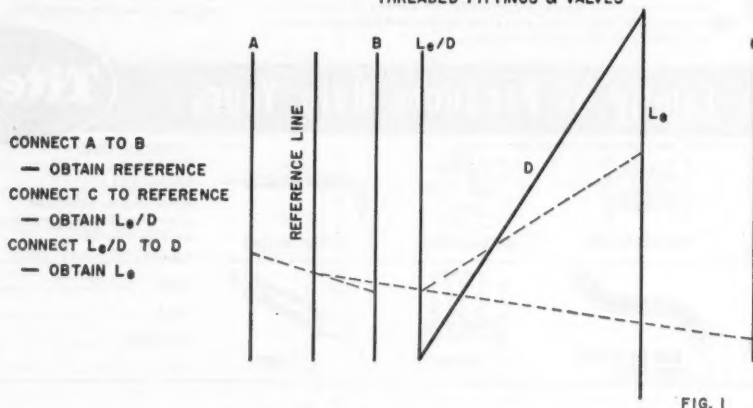
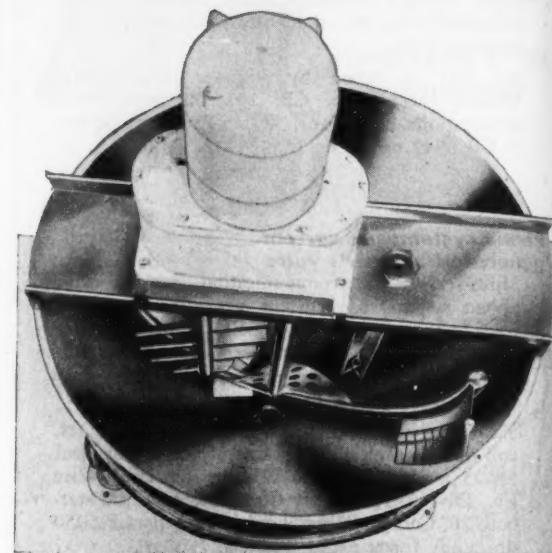


FIG. 1

You can borrow this Agitator Kettle...



to test it on *Your* processing problems

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STAINLESS STEEL
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VARIABLE
SPEED
AGITATOR
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with

GROEN EXTRA-FAST
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Why guess when you buy mixing equipment? Test first... and be sure! Borrow this GROEN Agitator Kettle for a reasonable time AT NO COST (except freight from and to Chicago or next destination). Then experiment on your own processing. Learn exactly what speeds are required and what agitator parts are necessary to do your work perfectly. The unit has variable speed drive... extra-high speed Rota-Therm steam jacket... and parts for every kind of mixing from violent whipping to simple stirring scraping or swirling actions. Use them all... use them separately... and learn definitely what you need. It's a great plan. Write today for details.

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**Informative booklet presents
Industrial lighting specs**

Detailed specifications for 18 of the most commonly-employed incandescent and fluorescent industrial lighting units are contained in 44-page booklet. Included are two new specifications, as well as important revisions and clarifications of existing specifications, and tables of coefficients of utilization and light distribution curves.

Due to increased employment of high-mounting units for high-bay industrial installations, specifications for such units are included. Wherever applicable, a light distribution curve and coefficients of utilization table have been included for both incandescent and fluorescent fixtures. Question-and-answer section explains objectives, purpose, scope, and procedure for developing specifications and insuring conformance.

"RLM Standard Specifications for Industrial Lighting Units," 1952 ed, is issued by RLM Standards Institute, Dept. CP, 326 W. Madison St., Chicago 6, Ill. When inquiring specify CP 6955 on handy form, pages 2 and 3.

**Illustrates applications
of welding electrodes**

Twelve-page, 2-color bulletin shows actual applications for welding electrodes by means of several photographs. Among the 52 different welding applications shown are overlaid gears and pinions made of cast iron or steel; steel mill maintenance welding; overlaid bearing surfaces and draw dies; fabrication of sheet and plate for wear and corrosion-resistant services; and welding of dissimilar metals.

"Ampco Welding News" No. 53 is issued by Ampco Metal Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 6956 on handy form, pages 2 and 3.

**Specifications, features
of combustion units**

Photos, drawings, and engineering data for various combustion units are included in three bulletins. Bul R-230T deals with a closed flame gas-oil burner which is designed for all types of industrial gases and commercial oils, using air from 8 oz to 3 lb. Bul R-120T gives detailed information regarding automatic, combination combustion gas and oil firing systems. Unit consists of a completely packaged burner, with all necessary controls, valves, instruments, etc, mounted on a pre-wired panel. Bul L-700 summarizes features and specifications for a variable, proportional air-gas mixer for use with low-pressure gas and air. Adjustment permits using mixer with any burner capacity in its range, with all commercially available gases from manufactured to butane gas.

Bulletins are issued by Eclipse Fuel Engineering Co., Dept. CP, Rockford, Ill. When inquiring specify CP 6957 on handy form, pages 2 and 3.

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Detroit—Stecker Electric Company
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Omaha—Omaha Electrical Works

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A-3864

When inquiring check CP 6958 on handy form, pgs. 2-3



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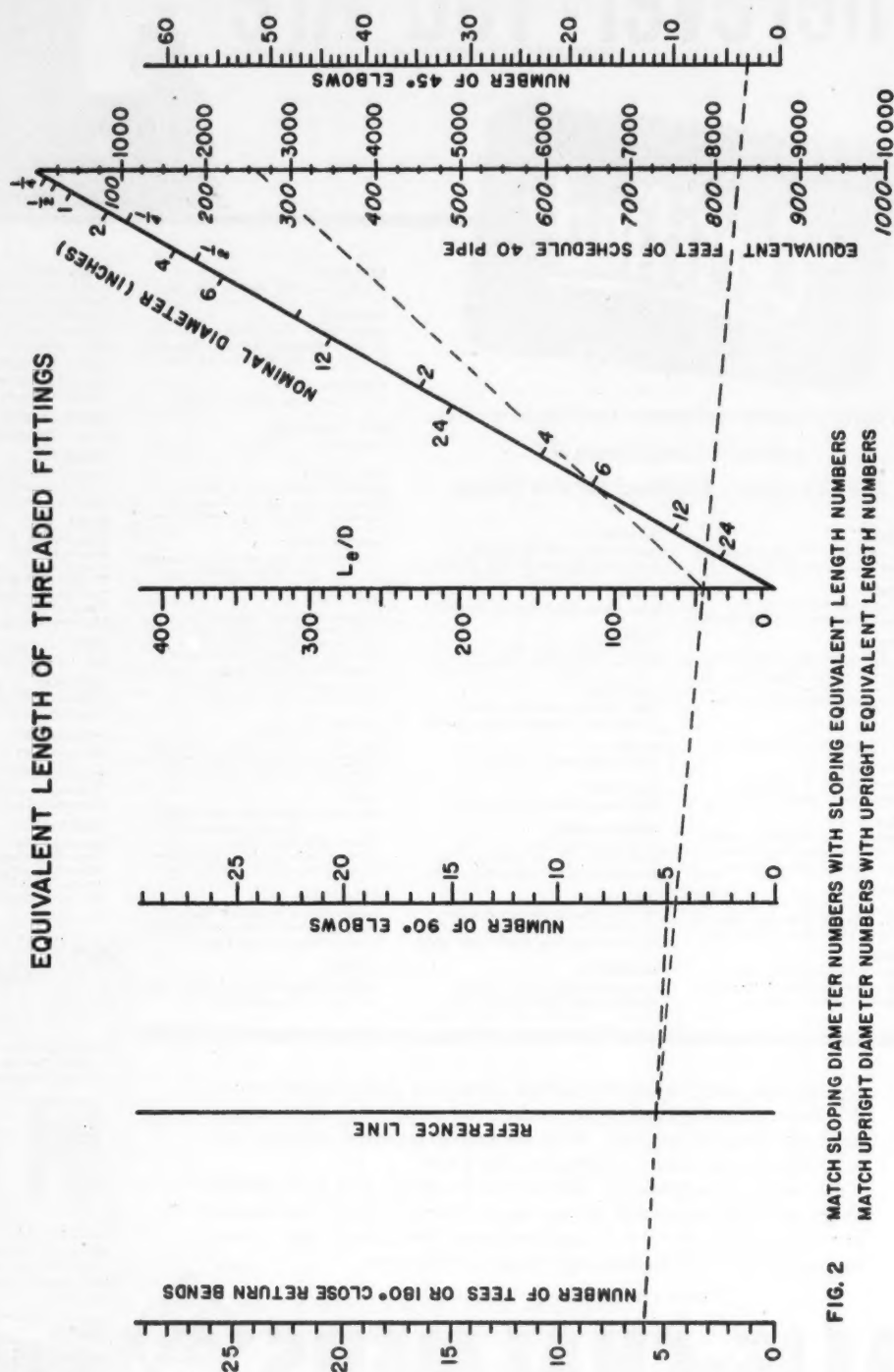


FIG. 2 MATCH SLOPING DIAMETER NUMBERS WITH SLOPING EQUIVALENT LENGTH NUMBERS
MATCH UPRIGHT DIAMETER NUMBERS WITH UPRIGHT EQUIVALENT LENGTH NUMBERS

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When inquiring check CP 6959 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Describes blowers and compressors

Eight-page bulletin discusses manufacturing facilities and products of maker of blower and compressor units. Oil cooler fans, gas turbines, and axial flow blowers are illustrated and described.

"Axial and Centrifugal Flow Blowers and Compressors" is issued by Sawyer Bailey Corp., Dept. CP, Buffalo, N. Y. When inquiring specify CP 6960 on handy form, pages 2 and 3.

Bulletins describe process pumps

Two illustrated bulletins discuss two types of industrial pumps. Bul P-332 contains four pages of factual illustrated information concerning a sanitary pump designed for use in processes where the product must be handled on a sanitary basis. Designed to handle high or low temperature, thin or viscous liquids and semi-solids under pressure or vacuum, unit has been used to pump various chemical and pharmaceutical products.

Bul T-161 gives specifications, features, and applications for a series of process pumps. Several illustrations are included. Bulletins are issued by Waterous Co., Dept. CP, 80 E. Fillmore Ave., St. Paul 1, Minn. When inquiring specify CP 6961 on handy form, pages 2 and 3.

Features of automatic lubrication systems

Four-page bulletin outlines features of centralized lubrication systems. Two different types of systems are outlined. Diagrams and photographs show construction and specifications of units. Typical applications are described.

Bul 529 is issued by Trabon Engineering Corp., Dept. CP, 1814 E. 40th St., Cleveland 3, Ohio. When inquiring specify CP 6962 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6963 . . . see information request blank between pages 2-3.

Damocles needed a SAFETY HEAD



Remember the legend of Damocles? His tyrant ruler compelled him to sit in the royal court for one day with a naked sword suspended over his head by a single hair.

THE MORAL: There are many "naked swords" hanging over industry's head today too. Perhaps you're a fellow sufferer with Damocles. Your plant may be threatened by damage from overpressure within pressure vessels. Damocles needed a warrior's helmet to save him from his sword . . . he needed a "safety head" tailored to his requirements. Pressure vessels need BS&B Safety Heads tailored to your particular pressure specifications . . . designed to fail safe when overpressure occurs.

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AND DISASTER . . .

Your Best Protection From Overpressure Within Pressure Systems

The heart of the BS&B Safety Head is the rupture disc. When this disc ruptures at a predetermined pressure you relieve the overpressure within pressure systems that spells safety to your personnel, protection to your property and valuable equipment. Knowing that BS&B Safety Heads are on the job in your plant affords you mental peace.

Into the rupture disc is built a controlled weakness. It's designed to fail safe within plus or minus 5% of the predetermined pressure specifications. You give us the necessary operating information and BS&B will give you a safety head with an action that is fast, positive and accurate . . . regardless of whether your pressure applications are for air, gas or liquid—bland or corrosive.

First, the metal is selected for fabrication to specifications of any given lot of discs. Then discs are selected at random and tested to destruction after lot is completed. If each one tested does not break within 5% of the rated pressure the entire lot is discarded. Rupture discs are available within range of 5 lbs. to 40,000 lbs.

BS&B Safety Heads can be used for either primary or secondary relief.

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one of "the swords of Damocles" that may plague you. Write today for complete BS&B Safety Head Catalog and details. There is no charge or obligation for a complete analysis of your pressure safety requirements.

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Safety Head Division

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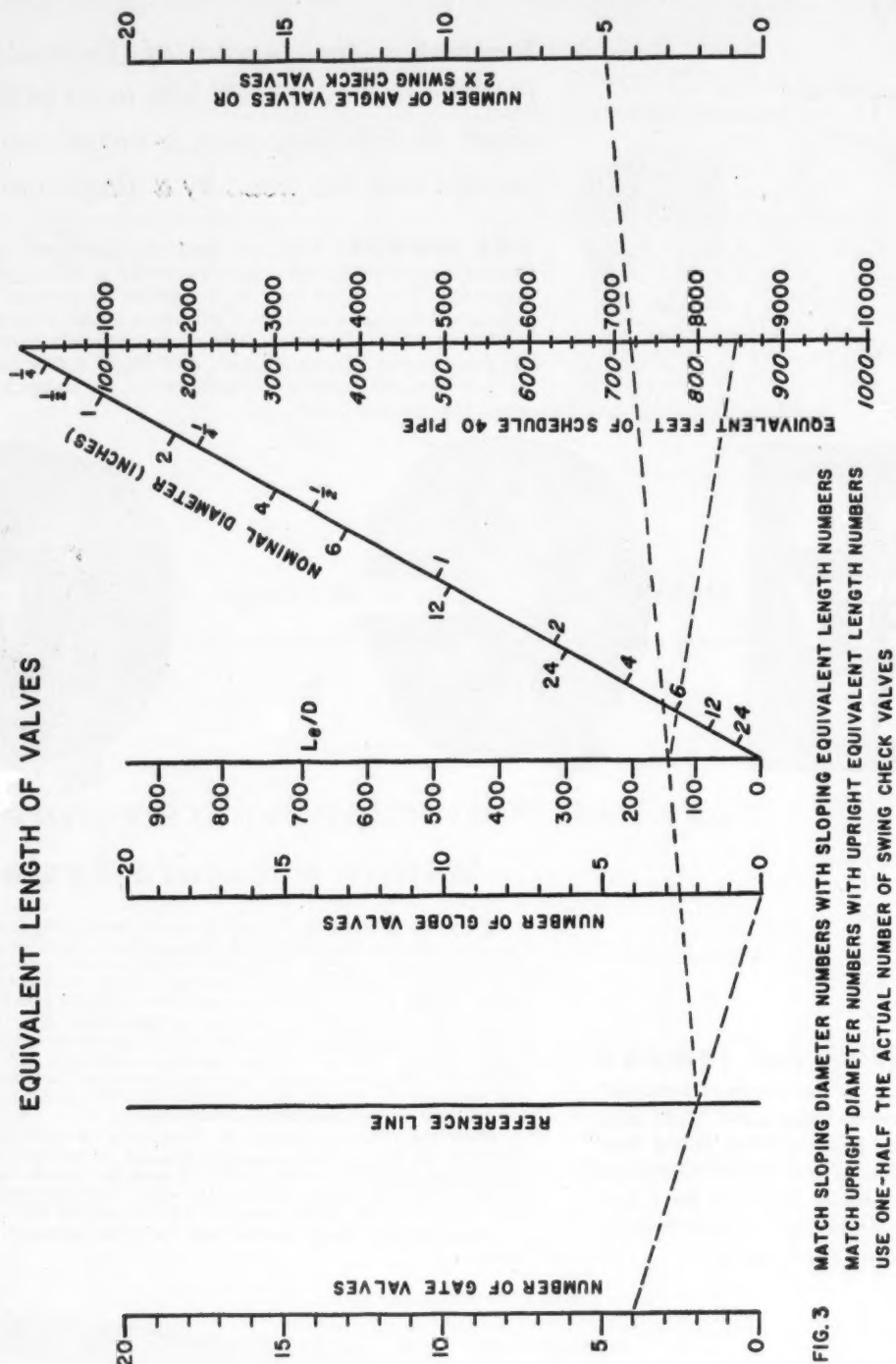
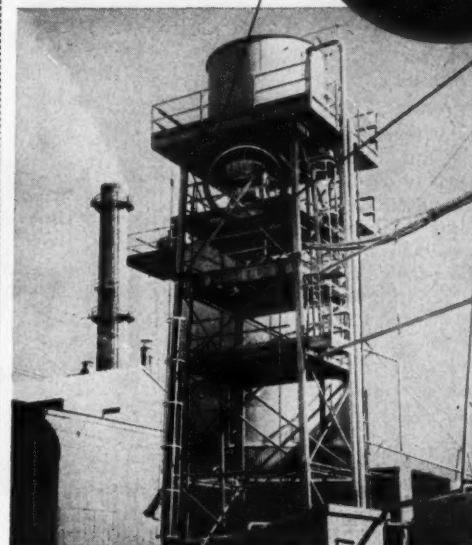
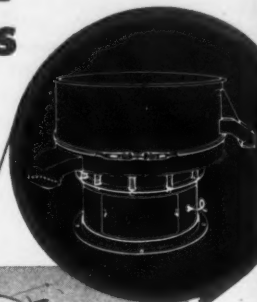


FIG. 3 MATCH SLOPING DIAMETER NUMBERS WITH SLOPING EQUIVALENT LENGTH NUMBERS
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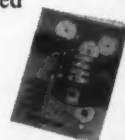


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When inquiring check CP 6964 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Picture-tour of plant facilities for sheet metal fabrication

Thirty-eight-page booklet contains numerous illustrations of sheet metal fabricating plant and manufacturing facilities. Also included in the bulletin is a comprehensive view of the typical parts and products in the complete line of fabrications marketed by manufacturer.

Products illustrated are made from galvanized and black sheet steel, a wide range of alloys including aluminum and stainless steel, plate up to $\frac{1}{2}$ " thickness, and light structurals. Types of parts which are pictured include: breaching and casings, factory equipment, machine bases, guards, cabinets, boxes, stampings, concrete forms, tanks, plating equipment, electrical enclosures, and trucks.

Bul F3-652-NL is issued by The Kirk & Blum Manufacturing Co., Dept. CP, Farrer St., Cincinnati 9, Ohio. When inquiring specify CP 6965 on handy form, pages 2 and 3.

No translation is necessary for foreign patent abstracts

Twelve-page bulletin contains abstracts of patent applications by well-known German and Austrian firms in fields of plastics and synthetic rubber. Altogether there are 44 reports, all of which are abstracted and listed with patent application number and other pertinent bibliographic information.

Bulletin contains seven sections: 1) silicones and related compounds; 2) vinyl and ethylene polymers; 3) styrene polymers; 4) elastomers; 5) cellulose and related compounds; 6) acrylics, phenolics, and polyesters; and 7) miscellaneous processes.

Bul 72 is issued by Research Information Service, Dept. CP, 53 Nassau St., New York 38, N.Y. When inquiring specify CP 6966 on handy form, pages 2 and 3.

Over 400 ratios available in speed changers

Miniature fixed-ratio speed changers, designed for use in solving fixed ratio gearing problems in instruments, servomechanisms, control, regulators, etc., are available in two series which include over 400 ratios in each series.

Many design possibilities are offered by these small, light-weight units. Both series are the same in appearance, size, weight, and general construction. However, one series is for normal gearing applications where low losses and smoothness of running are important factors, and the other series is for anti-backlash applications where the lost motion between input and output shafts must be essentially zero.

Bul 100 describing these units is issued by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 6967 on handy form, pages 2 and 3.

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THE holo-flite* (HOLLOW-FLITE) PROCESSOR

Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as $\frac{1}{5}$ th the space of other heat exchangers... causes no dust, therefore requires no costly or complicated auxiliary recovery equipment... and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

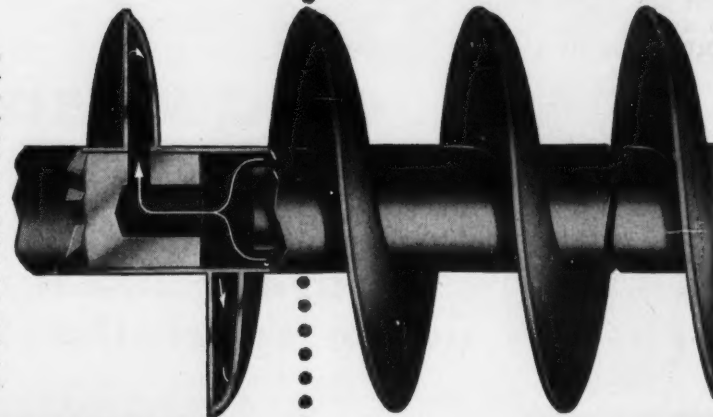
Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!

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- ▶ Permits Continuous, High Efficiency Operation!



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WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

Write for full details on the many savings the HOLO-FLITE Processor can bring to your particular applications.

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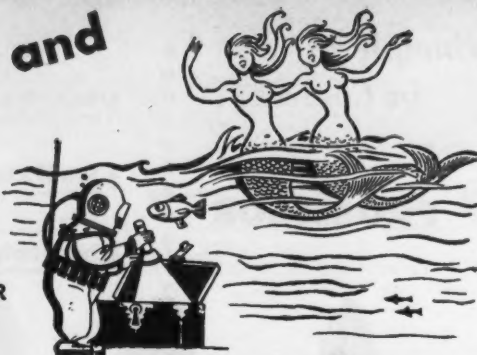
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When inquiring check CP 6968 on handy form, pgs. 2-3

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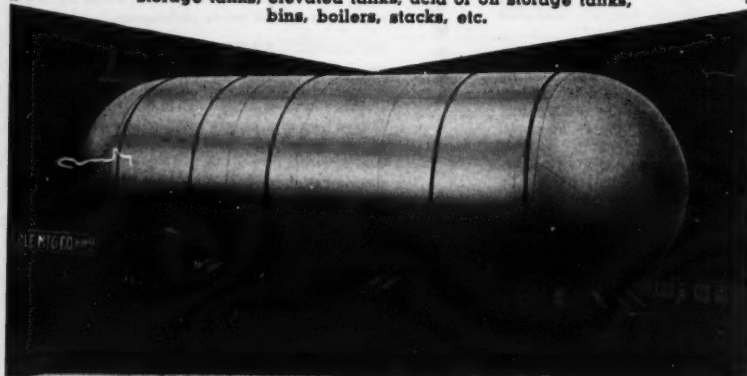
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When inquiring check CP 6969 on handy form pgs. 2-3

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We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



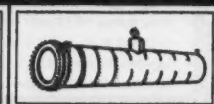
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NEWNAN, GA. Established 1854



TANKS



TOWERS



CYLINDERS



VESSELS

When inquiring check CP 6970 on handy form, pgs. 2-3

NEW LITERATURE

Uses of hydraulics in machine tools

Comprehensive manual includes information about hydraulic pumps and valves, featuring discussion concerning their maintenance and repair. In addition, the practical application of hydraulics to machines for control of speeds and feeds is outlined.

To obtain "Hydraulics as Applied to the Machine Tool Industry" remit \$2.00 direct to Products Service Dept., Vickers, Inc., Dept. CP, 1582 Oakman Blvd., Detroit 32, Mich.

Bulletin gives data on versatile pumps

Sixteen-page bulletin covers five basic groups and seventeen corresponding types of centrifugal pumps. Capacities, horsepower ratings, and uses are given for cradle-mounted units for all applications. Capacity range of 5-2400 gpm and pressures of 10-500 feet total head are included in listing of models.

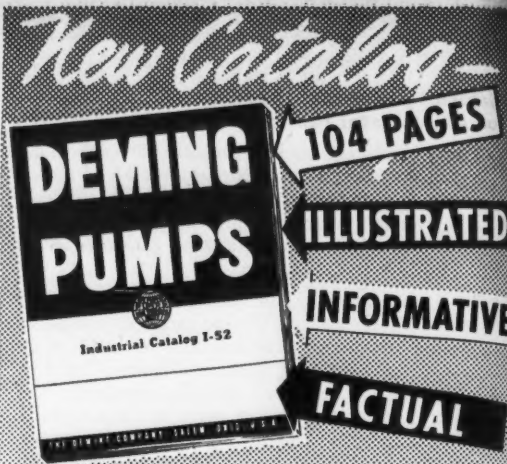
Photographs, sectional drawings, and chart outline features of construction and specifications. Sixty cycle performance is summarized. Complete dimensions are indicated by charts and drawings.

Typical installations are pictured in Form 7223 issued by Ingersoll-Rand Company, Department CP, 11 Broadway, New York 4, New York. When inquiring specify CP 6971 on handy form, pages 2 and 3.

Technical data on coatings

Four-page bulletin contains chemical resistance chart which summarizes characteristics of four series of protective coatings for use on wood, masonry, or metal surfaces. Eight types of coatings are described in detail in separate section of bulletin. Numerous photos show applications of products.

"Chemical Resistance Chart-Products Description" is issued by David E. Long Corp., Dept. CP, 220 E. 42nd St., New York 17, N. Y. When inquiring specify CP 6972 on handy form, pages 2 and 3.



"Industrial Catalog I-52"

This new catalog simplifies the selection of the right pump for the job. Contents include illustrated details of design and construction, tables of sizes and capacities and related data on the numerous types of Deming Industrial Pumps. Write for your free copy of "Industrial Catalog I-52."

THE DEMING COMPANY

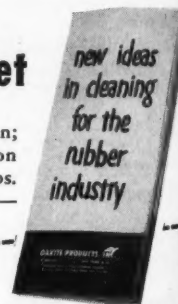
522 BROADWAY

SALEM, OHIO, U. S. A.

When inquiring check CP 6973 on handy form, pgs. 2-3

This FREE Booklet

tells how to increase production;
save time, money, equipment on
tough cleaning and descaling jobs.
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today!



OAKITE PRODUCTS, INC.
18F Rector St., New York 6, N. Y.

Please send me your booklet on
cleaning in the rubber industry. I am interested in

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MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in
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When inquiring check CP 6974 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Temperature recorder data
aid selection and use**

Complete details of temperature recorder construction are contained in 20-page catalog, which shows how each component contributes to recorder accuracy. Factual information is intended to assist reader in understanding, selecting, and using temperature measuring instruments.

One section of publication is devoted to selection of correct thermal system for temperature measurement applications. Characteristics of vapor pressure, gas pressure, and liquid expansion systems are explained with textual and chart media. Illustrations show actual installations, design features, charts of thermal systems. In addition to brief discussion of indicating and controlling temperature instruments, bulletin discusses rectangular and circular case instruments, temperature bulbs, charts, and accessories.

Bul 447 is issued by The Foxboro Company, Dept. CP, Foxboro, Mass. When inquiring specify CP 6975 on handy form, pages 2 and 3.

**Describes infrared unit
for process control**

Four-page data sheet presents comprehensive information regarding versatile infrared analyzer which is designed for plant stream service. In addition to illustrating and discussing application, operation, design features, and uses of the unit, bulletin also deals with ability of equipment to serve as a process control medium.

Numerous photos and a drawing illustrate features and applications of unit. Bul 10.16-7a is issued by Station 64, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6976 on handy form, pages 2 and 3.

**Mineral-insulated wiring
eliminates conduit**

Self-contained wiring material is made up of one or more conductors which are spaced and insulated with a non-combustible mineral insulation and encased in a seamless metallic tube. Its construction eliminates necessity of additional mechanical protection in form of conduit or other enclosures.

Twenty-four-page booklet provides complete history and detailed explanation of characteristics and applications of wiring system. Photos illustrate features and installations of material. Handy table contains specifications of various forms of wiring.

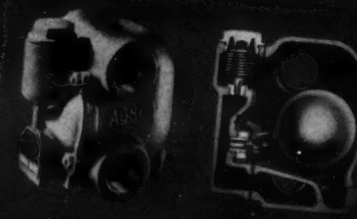
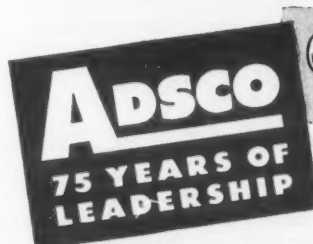
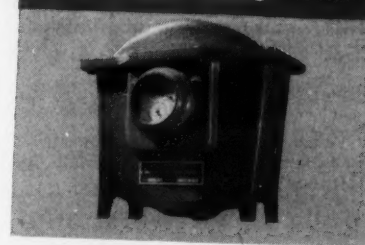
"Safety Mineral Insulated Wiring System" is issued by General Cable Corp., Dept. CP, 420 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6977 on handy form, pages 2 and 3.

ADSCO Y-TYPE STRAINERS



Protect regulators, pumps, valves, and traps with ADSCO Y-type Strainers. They remove dirt, scale, and other foreign matter from steam, gas, air, water, and oil lines... before the dirt reaches equipment. Maintenance thus is reduced and costly shutdowns prevented. Screens in ADSCO Y-type Strainers have free opening area 2 to 8 times greater than inside area of pipe. The gasketed cap and tapered fit for screens guarantee a uniform, snug fit. Pressure drop through strainers is no greater than an ordinary elbow.

Write for Bulletin 46-50B.

STEAM TRAPS**METERS**

AMERICAN DISTRICT STEAM COMPANY, INC.
NORTH TONAWANDA, NEW YORK

When inquiring check CP 6978 on handy form, pgs. 2-3

Most For Your Money

THE GREAT NEW

500

PIPE & BOLT THREADING MACHINE



Built like a
fine machine tool

Full of typical RIGID improvements

- Range 1/4" to 2" pipe; 1/4" to 2" bolts.
- Cutting, threading and reaming tools operate independently and right up to chuck, swing up out of way when not in use.
- New RIGID quick-opening quadritype, dualtype and monotype die heads save time and work.
- Concealed oil system, reversible pump, no priming.
- More than 20 other efficiency improvements—see this remarkable new RIGID "500" at your Supply House!

THE RIDGE TOOL CO. • ELYRIA, OHIO



When inquiring check CP 6979 on handy form, pgs. 2-3

NEW LITERATURE

Simplifies cleaning tasks for rubber industry

Twenty-four-page booklet contains numerous ideas and products which will simplify cleaning of rubber processing equipment. Forty separate topics related to cleaning of equipment and products are contained in illustrated booklet.

Partial list of subjects includes cleaning steel, iron, and aluminum molds; cleaning molds by steam-detergent method; preparing metal prior to rubber bonding; removing lime scale from water jackets of press platens; and treating sheet rubber before storage and shipping.

"New Ideas in Cleaning for the Rubber Industry" is issued on letterhead request to Oakite Products, Inc., Department CP, 118F Rector Street, New York 6, New York.

Versatile engine lubricant has unique molecular structure

Six-page bulletin describes lubricant which uses molecular structure of concentrated, purified molybdenum disulfide as basis of lubricating ability in internal combustion engines. Product is reported to be effective over temperature range from far below zero to over 750° F.

Molecular structure enables material to form bonded coat on bearing surfaces which will minimize danger of scuffing, galling, and excessive wear especially during periods of "break-in" when hydro-dynamic lubrication is not fully effective.

Bul 96 is issued by The Alpha Corp., Dept. CP, Greenwich, Conn. When inquiring specify CP 6980 on handy form, pages 2 and 3.

Checkerboard guide to voltage regulated power supplies

Four-page bulletin serves as index to 20-page catalog of voltage regulated power supplies. Bulletin illustrates and includes brief data (output AC and DC, regulation, and ripple) for 16 models, which are described more completely in catalog. Checkerboard appearance of bulletin offers quick survey of each item contained in catalog.

Description of electronic circuit panel and charts is also included in catalog. They are intended for use in experimental or research electronics. "Power Supplies" is issued by Kepco Laboratories, Inc., Dept. CP, 131-38 Sanford Ave., Flushing 55, N. Y. When inquiring specify CP 6981 on handy form, pages 2 and 3.

Thermocouple head features multi-purpose design

Two-page bulletin describes screw cover thermocouple head which can be used for single or duplex thermocouple or resistance thermometer terminal blocks. Typical users include refineries,



Even though the work bench grunts!

You can be sure that "K" Fittings have the stamina to stand all the strain put on them in making up tight joints. Our metallurgists control cupola mixes to maintain tensile strength above 30,000 lbs. while the standard is 21,000 lbs.

What's more, "K" Fittings are sound and uniform. Skillful molding assures freedom from thin walls, cold cheeks, sand holes. Threads of screwed fittings are tapped full and clean. Openings are chamfered so pipe will enter easily. The faces of flanged fittings are accurately milled; bolt holes exactly spaced.

The "K" line consists of—

Standard and Extra Heavy Screwed Steam Fittings.

Standard and Extra Heavy Flanged Fittings.

Standard and Extra Heavy Companion Flanges.

Standard Sprinkler Fittings

Standard Drainage Fittings

Standard Bushings, Plugs and Flange Unions.

The "K" on a fitting is our guarantee—your safeguard.

Good workmanship sells "K" Fittings

K PIPE FITTINGS
CAST IRON AND MALLEABLE
3,000 Shapes and Sizes

Complete information gladly furnished.

THE KUHNS BROTHERS COMPANY

Dayton 1, Ohio

Established 1887

Combined marketing facilities with
Malleable Iron Fittings Company, Branford, Conn.

When inquiring check CP 6982 on handy form, pgs. 2-3

chemical plants, glass and ceramic plants. Special applications where twin thermocouples with a single head are required are readily accommodated with unit.

Outstanding features are listed. Eight design advantages are outlined and illustrated with photographs. Drawings show dimensional specifications of several styles.

Bul 5601 is issued by Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Station 213, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6983 on handy form, pages 2 and 3.

Provides engineering info on open flow nozzles

Pertinent engineering information including accuracy, construction, dimensions, installation, and capacities of open flow nozzles is presented in 8-page bulletin. Units may be used for measurement of liquid flow with and without presence of suspended matter. Industrial applications are presented.

Charts and drawings summarize data for capacities, dimensions, and installations. Recording instruments and accessories which can be used with nozzles are described.

Bul 135-J5 is issued by Builders-Providence, Inc., Dept. CP, Providence, R. I. When inquiring specify CP 6984 on handy form, pages 2 and 3.

Case histories illustrate use of heat treating chemicals

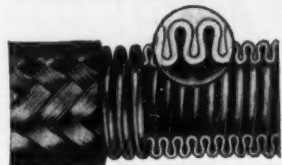
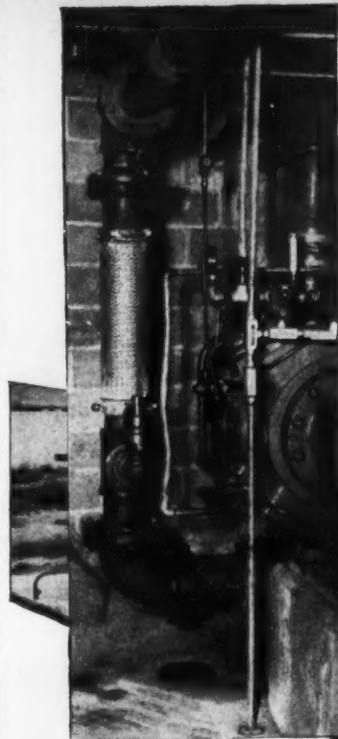
Through a series of case histories, booklet shows how several manufacturers used series of heat treating chemicals to overcome such problems as scale, distortion, non-uniform case composition, insufficient hardening, sludging, low pot life, and incomplete washing. In addition to tabulating the properties of these compounds in handy chart, booklet summarizes applications and advantages of products.

Bul 544 is issued by Industrial Chemicals Div., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 6985 on handy form, pages 2 and 3.

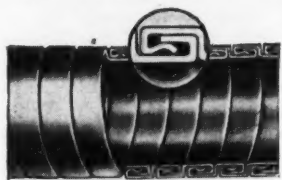
Complete line of equipment for material handling

Complete line of equipment for material handling is discussed, including electric fork trucks, stacker trucks, lift trucks, stackers, hoisters, skid platforms, racks, hydraulic and mechanical trucks, and floor trucks. Four-page bulletin illustrates and describes various units in detail.

Bul 80-200 is issued by Lewis-Shepard Products, Inc., Dept. CP, 860 Walnut St., Watertown 72, Mass. When inquiring specify CP 6986 on handy form, pages 2 and 3.



CMH corrugated steel and bronze hose is available in standard sizes from $\frac{3}{16}$ " through 14" I.D. for burst pressures to 12,000 psi, temperatures to 1000° F. Stainless steel types also available.

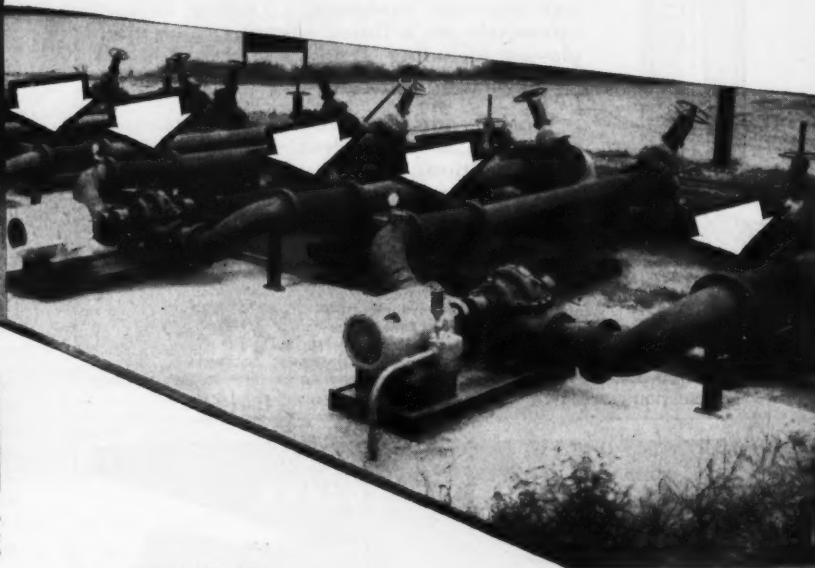


CMH convoluted hose is available for lower pressure applications in a variety of types including square locked, ball bearing and fully interlocked . . . in steel, bronze and other alloys. Sizes up to 12" I.D.



Flexen identifies CMH products that have served industry for over 50 years.

Here's the ECONOMICAL WAY to keep vibration out of rigid piping . . .



CMH FLEXIBLE METAL HOSE

Isolation of vibration is easy and economical when you use CMH Metal Hose to connect rigid piping to machinery.

Metal hose assemblies are quickly installed, just like a length of pipe. The flexibility of the unit effectively absorbs vibration while the all-metal construction assures long, dependable service.

If you have a vibration problem in your piping it will pay you to consider CMH Flexible Metal Hose. Your Flexonics distributor can give you full information. Look for his name in your classified telephone directory.

CHICAGO METAL HOSE Division

Flexonics Corporation

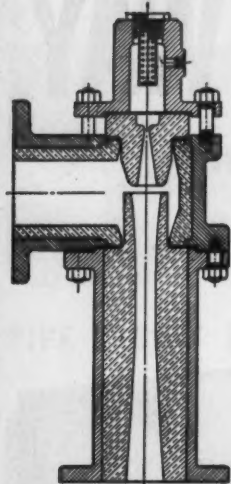
1319 S. Third Avenue • Maywood, Illinois

Manufacturers of Convoluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems • Stainless Steel and Brass Bellows • Flexible Metal Conduit and Armor • Assemblies of These Components
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

When inquiring check CP 6987 on handy form, pgs. 2-3

C-R EVACTORS

MEET CORROSION PROBLEMS



The chemical industries are employing more and more Croll-Reynolds Evactors in vacuum processes where corrosion resistance is a major consideration. These steam jet vacuum units provide pressures ranging from a few inches to a few microns. Croll-Reynolds is a pioneer in the use of new construction materials and our engineers are investigating corrosion problems continually.

Stainless steels, Monel metal, Beryllium copper, Ni-Resist, PMG metal, hard lead, special bronzes, Hastelloy, and Ilium are but a few of the special metals which find their way into our equipment. Carbon is used extensively as a lining material, and many plastics including Teflon and synthetic materials are used for making complete Evactors.

Consult our engineers for high vacuum equipment carefully designed for your specific conditions, and constructed of materials selected for your particular conditions.

Please address Department B

CROLL-REYNOLDS CO., Inc.

Main Office:
751 Central Ave., Westfield, N. J.

New York Office:
17 John Street, New York 38, N. Y.

CHILL VACTORS • STEAM JET EVACTORS • CONDENSING EQUIPMENT

When inquiring check CP 6988 on handy form, pgs. 2-3



SAYS **STOP** TO SOLIDS



Yarway
Fine Screen Strainers
prevent rust, scale and dirt
from clogging mechanical
equipment. Screens of woven Monel
wire, bodies and screen caps
cadmium plated. Made in 10 sizes—
1/4 to 3". Sold by over 200 industrial
distributors. Bulletin S-203.

YARWAY STRAINERS

YARNALL-WARING CO., 125 Mermaid Ave., Philadelphia 18, Pa.

When inquiring check CP 6989 on handy form, pgs. 2-3

NEW LITERATURE

Lists cutting torches and accessories

Two-page catalog illustrates line of cutting torches and tips for torches. Specifications and features of construction are outlined. Handy table summarizes various data of use in selection of proper tip for appropriate cutting jobs.

Cat M-38 is issued by The K-G Equipment Co., Inc., Dept. CP, 13-11 44th Ave., Long Island City, N. Y. When inquiring specify CP 6990 on handy form, pages 2 and 3.

Filter media replaced easy as "A-B-C"

Designed to accommodate many varied types of media, liquid filters feature slip-on construction which permits filter medium to be cleaned or replaced in minutes. Not only fabrics of plastics and natural fibers, but metallic meshes as well are available for use in the units.

Liquid filters are designed for use where rust, dirt, pipe scale and other contaminants need to be removed from process liquids. May be used also for filtering water and all types of liquid chemicals.

Bul D-11 contains specifications, engineering and performance data, photos, and descriptions of types of filter units and media in addition to check list of liquids that can be filtered. Bulletin is issued by Dollinger Corp., Dept. CP, 11 Centre Park, Rochester 3, N. Y. When inquiring specify CP 6991 on handy form, pages 2 and 3.

Lists complete line of industrial items

Thirty-two page catalog features description and specifications of steel shelving, lockers, and other storage and maintenance equipment for industrial use. Other items which are discussed include: steel desks, tables, relays, controls, ladders, work benches, and filing cabinets.

Equipment catalog is issued by Precision Equipment Co., Dept. CP, 3704 N. Milwaukee Ave., Chicago 41, Ill. When inquiring specify CP 6992 on handy form, pages 2 and 3.

Send for this Valuable Booklet

MANUFACTURERS
CONSULTANTS
ANALYSTS



You can now buy Haering Glucosates in drums for immediate delivery—Quachrom Glucosate, Sodium Chrom Glucosate, Tetra Phospho Glucosate and all the 11 specialized Glucosates for control of Scale, Corrosion and Algae.

Send for this new book on your company letterhead today! It will save you time and money.



D.W. HAERING & CO., Inc.

GENERAL OFFICES
Harlandale Station, San Antonio, Texas

When inquiring check CP 6993 on handy form, pgs. 2-3

GET COMPLETE FACTS ON GRINDING MILLS

• Pebble Mills • Ball Mills • Rod Mills

Write for this useful 44-page book, Bulletin 07B6718A. Full of helpful facts on:

- Grinding media action.
- Mill applications.
- Wet vs dry grinding.
- Grinding circuits.
- Critical mill speeds.
- Grindability indices.



ALLIS-CHALMERS
Milwaukee 1, Wis.

Company.....
Attention of.....
Address.....
City..... State.....

ALLIS-CHALMERS

When inquiring check CP 6994 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Deals with eleven sizes of industrial fans

Twelve-page booklet describes eleven sizes of industrial fans and their standard wheels. Models described range in size from 670 to 44,000 cfm at pressures up to 16" of mercury.

In addition to presenting table of condensed specifications on performance and dimensions, booklet discusses each of three available wheel types — air handling, material handling, and long shavings. Typical applications for each type of unit are included, and arrangements in which fans may be obtained are shown. Table of maximum operating rpm's for various fan sizes and operating temps is presented.

Bul SA-6873 is available from Dept. T-415, Sturtevant Div., Westinghouse Electric Corp., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 6995 on handy form, pages 2 and 3.

Gives capsule digests of electrical units

Four-page bulletin describes and illustrates motors, adjustable drives, electronic controls and regulators, and generators. Material included will be of interest to production managers, maintenance superintendents, machinery designers, electrical engineers, plant electricians, and others interested in motors and related in-plant power-transmission equipment.

Functions and advantages of products are described. Service applications for which they are designed are indicated. Representative units are illustrated. Bul A-2703 is issued by Reliance Electric and Engineering Co., Dept. CP, 1088 Ivanhoe Rd., Cleveland 10, Ohio. When inquiring specify CP 6996 on handy form, pages 2 and 3.

96-page catalog of analytical and lab instruments

First section of manufacturer's 96-page, instrument catalog offers technical description, sectional views, and chart records of several analytical instruments. This section includes spectrometers of infrared, ultraviolet, mass, Raman, and X-ray models; other items reported in catalog are polarographs, titrators, stills, and continuous gas analyzers.

Second section of publication lists similar technical data for laboratory measuring instruments such as pyrometers, potentiometers, recorders and indicators, high vacuum gages, and pressure as well as force transducers.

Final ten pages of catalog are devoted to research apparatus components such as servo amplifiers, converters, and balancing motors. Bul 15-14 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Ave., Philadelphia 44, Pa. When inquiring specify CP 6997 on handy form, pages 2 and 3.

The advertisement features a central tachometer with a scale from 0 to 15 (labeled 'R.P.M. HUNDRED'). Four circular callouts are connected to the tachometer: 'LOADING Low Speeds' (pointing to 0-3), 'UNLOADING Positive, Slow Speeds' (pointing to 3-6), 'WASHING Intermediate Speeds' (pointing to 6-9), and 'FINAL EXTRACTION High Speed' (pointing to 9-15). To the right is a large industrial centrifugal machine with a complex frame and a central drum. Below the tachometer is a black box with white text: 'Infinitely Variable Speed MEANS MORE EFFICIENT PROCESSING'. Below this is a paragraph of text, followed by a section titled 'YOUR CHOICE OF MATERIALS' with three bullet points. To the right of this is a table titled 'BASKET SIZES AND SPEEDS' listing diameters from 20" to 48" and their corresponding RPM ranges. At the bottom right is the contact information for the Tolhurst Centrifugals Division.

LOADING
Low Speeds

UNLOADING
Positive, Slow Speeds

WASHING
Intermediate Speeds

FINAL EXTRACTION
High Speed

R.P.M. HUNDRED

Infinitely Variable Speed
MEANS MORE EFFICIENT PROCESSING

Do you process materials which require centrifuging at different speeds? Or do you have several products with different filtering and washing characteristics to be processed in the same centrifugal? If so, Tolhurst Suspended Centrifugals with infinitely variable speed hydraulic drive provide the most efficient answer. By simply turning the hand wheel on the fluid drive unit, you can select exactly the speed you want for each different operation. Tachometer indicates basket speed at all times.

YOUR CHOICE OF MATERIALS

BASKETS — Perforate or imperforate, constructed of steel, steel rubber-covered, stainless steel, monel or other materials.

CASE — Steel case can be lined with stainless steel, monel, rubber or other materials.

RACK AND PLOW OF COUNTERBALANCED UNLOADER—Steel, stainless steel, monel or bronze.

ACCESSORIES — Machine can be furnished with fume-tight cover, feed and spray pipes.

BASKET SIZES AND SPEEDS

20" diameter	0-2500 RPM
26" diameter	0-2500 RPM
32" diameter	0-1500 RPM
40" diameter	0-1500 RPM
48" diameter	0- 900 RPM

WRITE FOR DETAILS AND PRICES

Tolhurst

CENTRIFUGALS DIVISION
AMERICAN MACHINE AND METALS, INC.
EAST MOLINE, ILLINOIS

When inquiring check CP 6998 on handy form, pgs. 2-3



3-Way Full Area, Packless Solenoid Valves

PIPE SIZES: 1, 1 1/4, 1 1/2 and 2 inches

We recommend this valve for controlling equipment where pressure must be alternately applied and exhausted as, for example, with diaphragm motor valves, air or hydraulic cylinders, etc. Classed as Bulletin 8331 ASCO Valves, here are a few specifications: maximum pressure 125 to 250 pounds; minimum pressure 10 to 20 pounds. Suitable for handling air, water, gas, oil and other non-corrosive gases or liquids up to 180°F.

Since the automatic control of any alternating application and release of pressure is so important for efficient operation, we suggest that you bring your problems to the attention of our engineers whose experience goes back nearly 40 years.

If you have recurrent and varying needs for automatic control valves, you should have our General Valve Catalog No. 23.

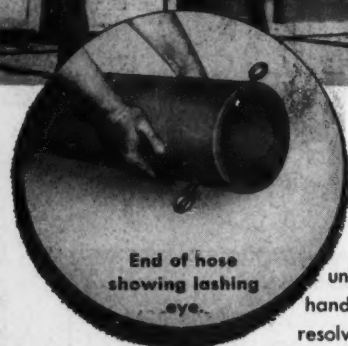
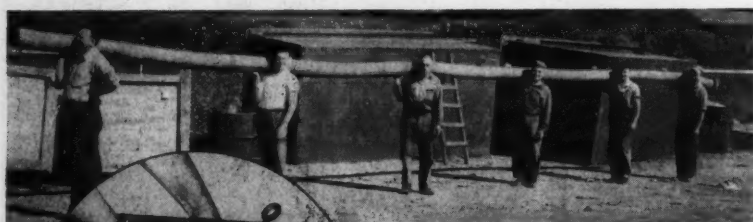


When in need of Automatic Transfer Switches, Remote Control Switches, Contactors, Relays, and Specialized Electromagnetic Controls, come to us. V-31-6

Automatic Switch Co.

379 LAKESIDE AVENUE • ORANGE, NEW JERSEY

When inquiring check CP 6999 on handy form, pgs. 2-3



6 inches in DIAMETER by 35 feet LONG

THIS all-rubber hose for conveying citric acid as part of loading and unloading facilities is also subjected to rough handling. It is typical of some of the problems resolved by La Favorite Rubber Engineering.

In any situation involving protection against corrosion, erosion or abrasion in processing, conveying or storing, consult our Rubber Engineering Department. The advice of La Favorite engineers can be very helpful and may be valuable in saving substantial sums in original investment and maintenance. Consult them freely, without obligation.

Send for report #366.

This report may stimulate your thinking on the possible savings with the use of La Favorite Rubber.



LA FAVORITE RUBBER MFG. CO.

267 Wagaraw Road

Hawthorne, N. J.

RUBBER LININGS

RUBBER COVERING

RUBBER ENGINEERING

When inquiring check CP 7000 on handy form, pgs. 2-3

NEW LITERATURE

Motor-generator sets — 3/4 to 1000 kw

Four-page, illustrated bulletin outlines specifications and features of motor-generator sets.

Units are shunt or compound wound, from 3/4 to 1000 kw, designed to provide power for constant-voltage and adjustable-voltage systems, and engineered to include synchronous or induction motors. Photos are included to show typical applications of units.

Bul F-2502 is issued by Reliance Electric & Engineering Co., Dept. CP, 1088 Ivanhoe Rd., Cleveland 10, Ohio. When inquiring specify CP 7001 on handy form, pages 2 and 3.

Gives specifications of welding units

Four-page booklet includes handy table which gives specifications of resistance welding units. Photos and text give details of construction and features of various units.

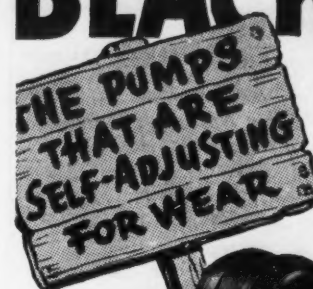
"Resistance Welders" is issued by The Multi-Hydromatic Welding and Manufacturing Co., Dept. CP, 23171 Groesbeck Hwy., East Detroit, Mich. When inquiring specify CP 7002 on handy form, pages 2 and 3.

Store volatile liquids, gases under pressure

Advantages of storing highly volatile liquids and gases in spherical storage tanks under pressure are described in 8-page booklet. Tables of size are included in the bulletin. Tanks for storage of liquids range in capacity from 1000 to 30,000 bbls, for operating pressures of about 30 to 215 psi. Spheres for gas storage have been designed in standard sizes from 32 to 80' in diameter, for operating pressures of 30 — 150 psi.

Features of construction, operation principle, capacities, fittings, and other specifications are discussed. Numerous photos show typical installations. Bul F is issued by Chicago Bridge & Iron Co., Dept. CP, Chicago, Ill. When inquiring specify CP 7003 on handy form, pages 2 and 3.

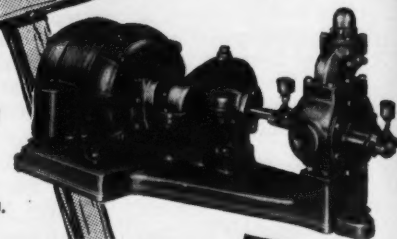
BLACKMER



The self-adjusting design maintains full pumping capacity even after years of severe service.

WHEREVER
LIQUIDS ARE
HANDLED

Capacities
5 to 1500 G.P.M.



Get the "FACTS"

Blackmer Pumps

Blackmer Pump Company
Grand Rapids 9, Michigan

Write for a copy!



When inquiring check CP 7004 on handy form, pgs. 2-3

SPRAY NOZZLES



... FOR EVERY NEED!

For lower cost and more efficient spraying try Spraying Systems Spray Nozzles. Complete type and size selection for every need. Write for Catalogs.



SPRAYING SYSTEMS CO.

3216 Randolph Street • Bellwood, Illinois

☐ Send me Catalog No. 22 ☐ Send me Catalog No. 23

Name _____

Company Name _____

Address _____

City _____ State _____

When inquiring check CP 7005 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Integrated unit records, controls
pH — automatically**

Unit which incorporates complete electrometer system in one instrument, for automatic recording and control of acidity and alkalinity of aqueous processing solutions, is described in four-page bulletin. Instrument consists of three basic components: 1) an electrode assembly, 2) an electrometer amplifier circuit, and 3) a potentiometer recorder.

Components of measuring system, operational adjustments, types of electrodes and uses, variations in recording systems, automatic pH control, and features of the automatic system are discussed in bulletin. Photos and circuit diagrams illustrate features and specifications of units. Bul 10.7-1 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 7006 on handy form, pages 2 and 3.

**Illustrated data cover
special lab equipment**

Fourteen-page booklet describes three specialized types of laboratory equipment — Kjeldahl Nitrogen apparatus for the determination of protein, Goldfish fat extraction apparatus, and crude fiber condensers. In the discussion of Kjeldahl apparatus, individual sections deal with digestion and fume removal, distillation, heating equipment, general construction and standard arrangements, model selection, and list of users. Numerous photos illustrate typical installations.

Features and construction of the fat extraction units and crude fiber condensers are described and illustrated with photos.

"Modern Kjeldahl Apparatus" is issued by Laboratory Construction Co., Dept. CP, 1115 Holmes St., Kansas City 6, Mo. When inquiring specify CP 7007 on handy form, pages 2 and 3.

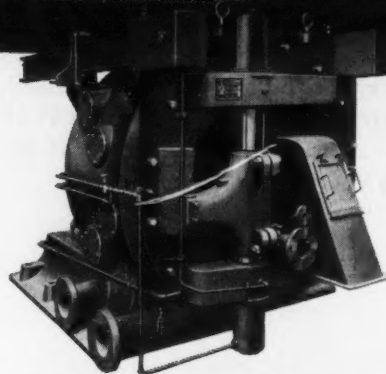
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available in 5 models**

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Detailed information on available temperature ranges, models, features, dimensions, and uses is given in 4-page bulletin. Bul 315 is issued by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. When inquiring specify CP 7008 on handy form, pages 2 and 3.

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(for quick-draining crystals)

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- provide simultaneous dewatering and fines (slimes) removal.

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When inquiring check CP 7009 on handy form, pgs. 2-3



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Cat SYS-821 is issued by Randolph Laboratories, Inc., Dept. CP, 8 E. Kinzie St., Chicago, Ill. When inquiring specify CP 7010 on handy form, pages 2 and 3.

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Featuring interchangeable mixing cans which allow increased flexibility of mixing operations, line of mixers includes models for production, laboratory, and other uses. Units are available in geared and gearless types with one and two-speed models in each type. Features include heavy-duty drive, rugged construction, and easily-lifted head.

Features, construction, and specifications of mixing units are outlined and illustrated in 8-page bulletin. Bul 500 is issued by The J. H. Day Co., Inc., Dept. CP, 1144 Harrison Ave., Cincinnati 22, Ohio. When inquiring specify CP 7011 on handy form, pages 2 and 3.

Safety Committee

(Continued from page 5)

safety practices applicable to manufacturing, handling, and transportation of chemicals commonly used in industrial processing. This material is prepared in the form of Safety Data Sheets on individual chemicals, 49 of which have been issued thus far. The Data Sheets are written by authorities chosen from the membership of the association. Thousands of copies have been distributed worldwide, at cost, to chemical firms and industrial plants using chemical products. Additional thousands have been distributed free of charge to government agencies, universities, and other institutions.

The Committee has prepared an extensive Laboratory Safety Manual which will be published in 1953. It also issues to members summaries of industrial injury experience data and periodic case history reports on outstanding accidents.

Since 1950 the Committee has presented certificates of achievement to plants of MCA member firms which have operated a full year without a lost-time accident. In 1951, 183 of these US chemical plants had perfect safety records. To further stimulate interest in safety, the Lamot du Pont Safety Awards

were established last year. The awards are made annually to the chemical companies which have shown the greatest reduction in industrial injuries for the most recent two-year period compared with the previous three years.

We feel that the excellent safety record of the industry can be attributed to management's recognition that accident prevention is essential for good employe and community relations, and that the financial saving through accident reduction more than justifies the expense of a model safety program. It is hoped that the continuing activities of the Committee and the recently inaugurated long-term public information program of MCA will bring about a gradual change in the public's knowledge of the industry's outstanding safety record.

Convention & Exhibit Schedule 1952

Dec. 18. The Material Handling Institute, Inc., Annual Meeting, Keystone Rm at 11:45 am, Hotel Statler, New York City, N. Y.

1953

Jan. 19-22. Society for Advancement of Management and The American Society of Mechanical Engineers will jointly sponsor a Plant Maintenance Conference, Public Auditorium, Cleveland, Ohio.

Jan. 21-23. Society of Plastics Engineers, Inc., Ninth Annual National Technical Conference, Hotel Statler, Boston, Mass.

Jan. 22. Commercial Chemical Development Association, limited to members and their guests, Hotel Statler, Cleveland, Ohio.

Feb. 4-6. Institute of Radio Engineers and American Institute of Electrical Engineers will jointly sponsor first meeting of Western Computer Conference, Hotel Statler, Los Angeles, Calif.

Mar. 8-11. American Institute of Chemical Engineers, Buena Vista Hotel, Biloxi, Miss.

Mar. 15-19. American Chemical Society, 123rd National Meeting, Los Angeles, Calif.

Mar. 23-24. Commercial Chemical Development Ass'n., annual open meeting, Hotel Statler, New York, N. Y.

Apr. 13-15. American Society of Lubrication Engineers, Annual Meeting and Exhibit, Hotel Statler, Boston, Mass.

May 9-15. The Society of the Plastics Industry, Inc., Annual Meeting and Conference, Cruise to Bermuda.

May 18-22. The Material Handling Institute, Inc., Fifth National Materials Handling Exposition, Convention Hall, Philadelphia, Pa.

Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.

Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.

Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, Hotel Jefferson, St. Louis, Missouri.

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Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS



Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

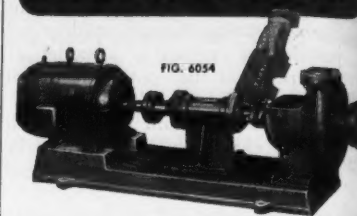
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TABER PUMPS

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When inquiring check CP 7015 on handy form, pgs. 2-3

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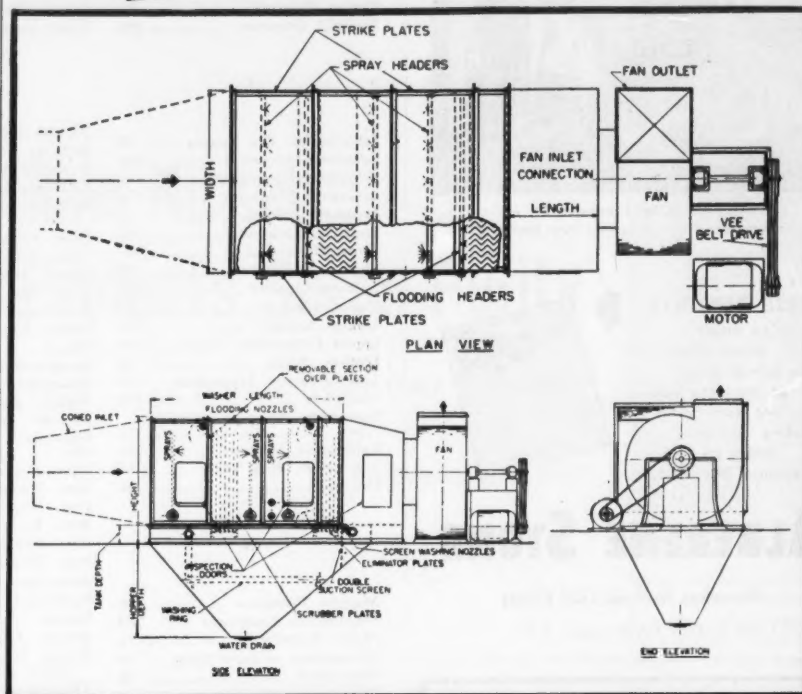
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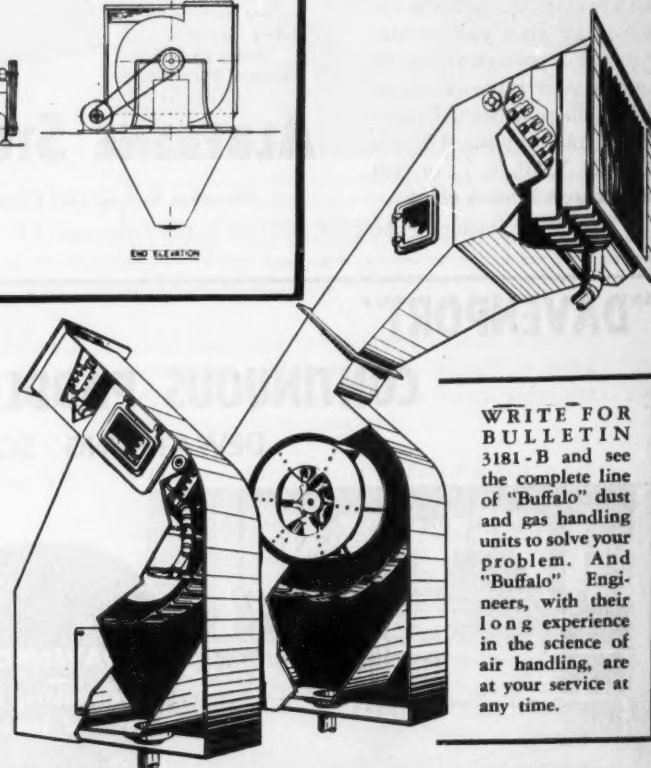
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BUFFALO, NEW YORK

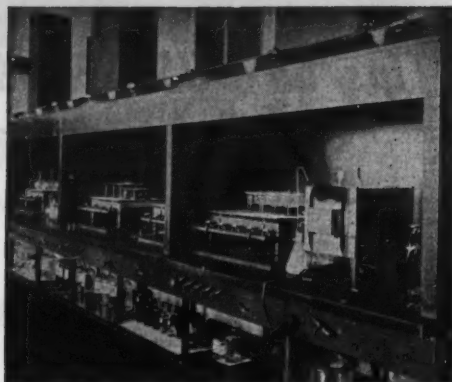
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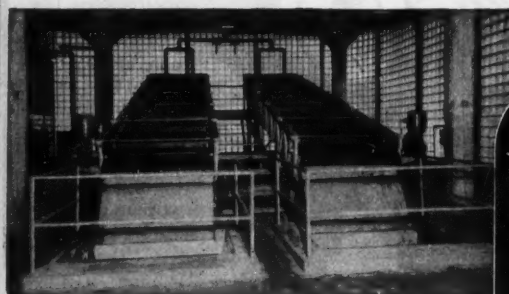
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CONTINUOUS PADDLE

DEWATERING SCREEN



Recovering Waste Pulp

If concentrating the suspended solids is a problem in your process, it would pay you to investigate the Davenport Continuous Inclined Paddle type Dewatering Screen. Write for our complete catalog.

For quick reference see "Sweet's 1952 Processing Industries" file or "Chemical Engineering Catalog" — 1953.

DAVENPORT MACHINE
and FOUNDRY COMPANY
DAVENPORT 4, IOWA

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De watering Press-
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ROTARY

Steam Tube, Hot
Air and Direct Fire
Dryers.

Water Tube and
Air Coolers.

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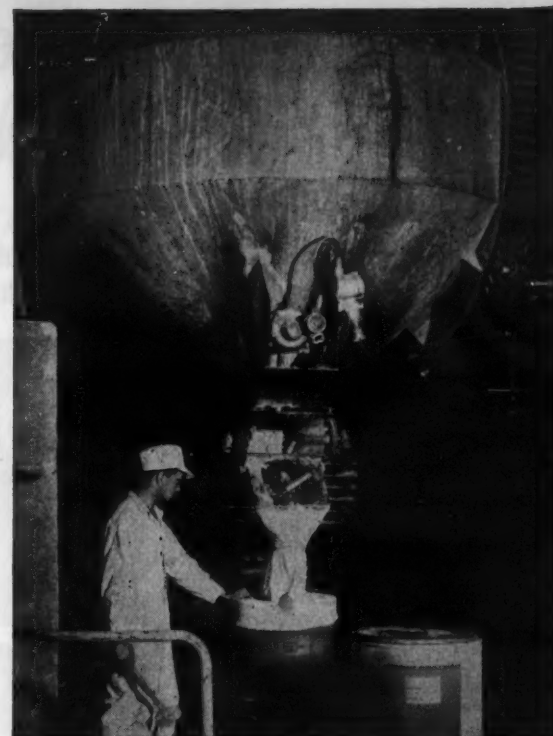
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How Nickel Protects Saran Purity

...from wet polymer
to
finished plastic



Saran molding powder is mixed and made ready for shipment in nickel blenders designed and manufactured by Industrial Process Equipment Engineers, Newark, N. J. The 220 cu. ft. blenders have conical sections of solid nickel and nickel-lined cylindrical sections. Nickel was used because other metals have proved detrimental to the quality of the plastic.

As a finished product, saran is a wonderful material—it's inert to most oils and chemicals at room temperatures—has high tensile and impact strength.

But it must be handled gently in certain stages of production.

The manufacturers of the saran powder found that out in the processing...

As a wet polymer it is sensitive to many metals and may turn yellow when it comes in contact with them. The chemical company which makes the powder found a solution to this problem in specially designed blenders made of nickel.

Then the manufacturers of saran-molded products discovered that certain metals catalyze the decomposition of the material. They too

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And when the extruders found that the hot saran was corroding their equipment, they turned to tough Duranickel for cylinder liners, screws, dies and other parts.

Perhaps you, too, have a problem of purity-protection or corrosion. If so, why don't you write Inco's Corrosion Engineering Section and tell them your problem. They'll be glad to help you.

Right now, of course, Inco Nickel Alloys are on extended delivery because of defense needs. Therefore, orders should be placed well in advance, giving necessary NPA rating and complete end-use information.

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INCONEL® • INCONEL "X"® • INCOLOY • NIMONICS®

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AUTO-KLEAN'S "NON-STOP" FLUID FILTRATION STEPS UP PRODUCTION IN CHEMICAL PLANTS

There's no need to shut down to clean this strainer!

The Cuno AUTO-KLEAN is the only fluid cleaner on the market that operates continuously—without requiring costly interruptions in flow and service. Cuno's exclusive "comb-clean" action allows complete cleaning of the filter element without stopping fluid flow.

Thus, no loss of production, no chance of contaminating the product by exposure while cleaning or replacing an element.

AUTO-KLEAN's low pressure drop permits full-flow operation on gravity, low pressure, or suction lines—with no loss in operating efficiency. AUTO-KLEAN's compact construction provides this full-flow fluid protection in space which would limit ordinary filters to by-pass service.

The low maintenance costs of the AUTO-KLEAN save you money, for there are no cartridges to change. An occasional rotation of the handle does a thorough cleaning job (most units can be equipped with motor-drives for continuous cleaning).

Fixed-space metal discs in this modern strainer positively remove all solids larger than the specified disc spacing—from .0035" up to .062".

Find out now about Cuno's AUTO-KLEAN—the precision-built strainer.

A.3.2

Cuno Engineering Corporation
Dept. 16 2A, So. Vine Street, Meriden, Conn.

Please send information on Cuno AUTO-KLEAN
for (fluid)

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Company.....

Address.....

City.....Zone.....State.....

Here's how this strainer "combs" itself clean!

This simple chalk test shows how AUTO-KLEAN's unique built-in comb construction cleans the strainer without costly interruption of flow



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TURNING HANDLE ONE REVOLUTION moves strainer element through comb blades, removing all traces of chalk from between discs. Cuno's exclusive combing operation cleans *thoroughly*—without stopping flow.



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- AUTO-KLEAN is adaptable to any fluid-flow system.
- From acids to tar . . . if you can pump it, Cuno can filter it. Capacities range from one gallon per hour to 15,000 gallons per minute.



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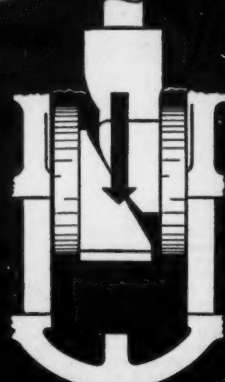
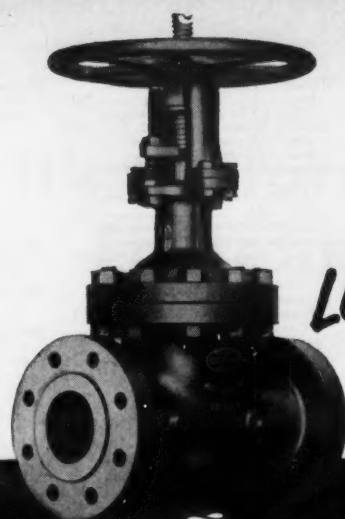
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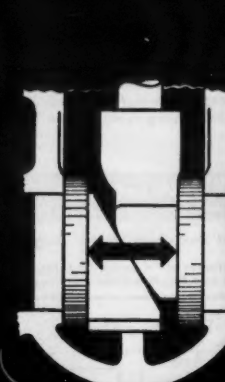
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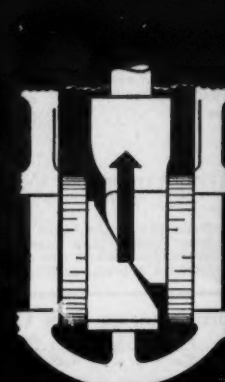
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with Darling
revolving disc gate valves*

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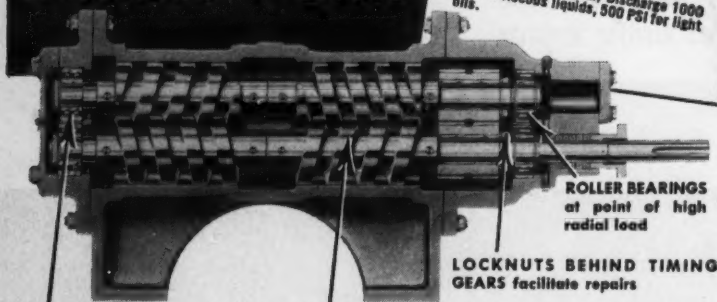
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and Semi-Fluids

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Also Manufacturers of "Gearax" Pumps, Precision Gears and Flexible Gear Couplings

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COMPOUND

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Even at 1800° F.!

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(1) short articles

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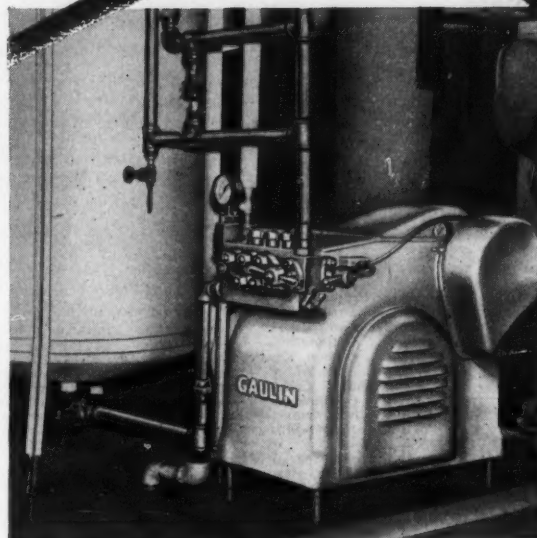
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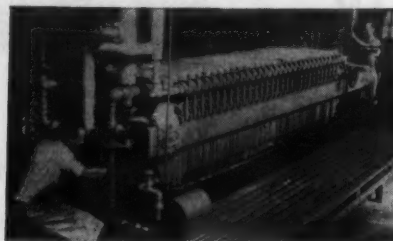
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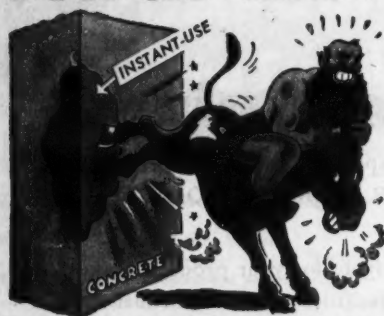
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CHEMICAL PROCESSING

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The Armour Laboratories, Chicago 11, Ill., have prepared bovine cartilage taken from young steers and made it available to plastic surgeons for replacement of lost or damaged tissue in reconstructive surgery. All surgeon need do is remove cartilage from sterile solution and cut or shape a piece to fit need of patient.

Medical engineering

Recent article in *Industrial Bulletin* of Arthur D. Little, Inc., discussed the growing need to apply our physical knowledge and instrumentation to the problems of modern medicine. The utilization of electronic devices in medical research, diagnosis, and therapy is producing excellent results. The prospect of "medical engineering" is increasing rapidly as the physical and biological sciences continue to be integrated with modern medicine.

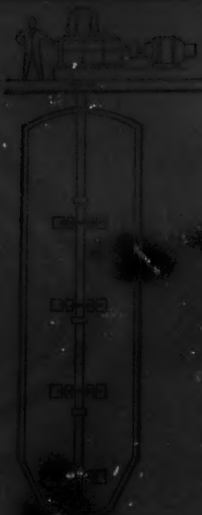
Fingerprinting diamonds

An optical instrument reported in the *Aminco Laboratory News* will photographically record the light reflected from the back or pavilion facets of a diamond. Since the facets of two diamonds of same weight and cut are never fashioned absolutely (mathematically) alike, no two prints of identical pattern are possible.

Price of paint is up to \$75 per gal

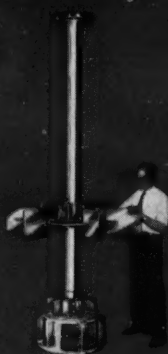
The fact that practically nothing will adhere to Teflon polytetrafluoroethylene finish is the primary explanation for its \$75 a gallon cost. This E. I. du Pont de Nemours & Co. product is a water suspension of manufacturer's plastic, which still retains the notable properties of Teflon. Paint is intended to solve engineers "sticking headaches," where substances are apt to cling to smoothest metal surface.

For more information on product at right, specify CP 7029 . . . see information request blank between pages 2-3. ➔



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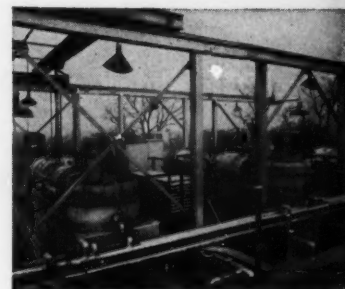
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shows how MIXCO engineers can adapt standard LIGHTNIN Mixers to a custom processing job, and save you money. Your LIGHTNIN Mixer representative will be glad to assist you with your fluid mixing requirements—or write us direct. For catalog information about LIGHTNIN Mixers check and mail the coupon.



SUBSTANTIAL SAVINGS come from using standard equipment on big mixing jobs, like this battery of LIGHTNIN Mixers at a Commercial Solvents Corporation plant.

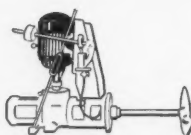
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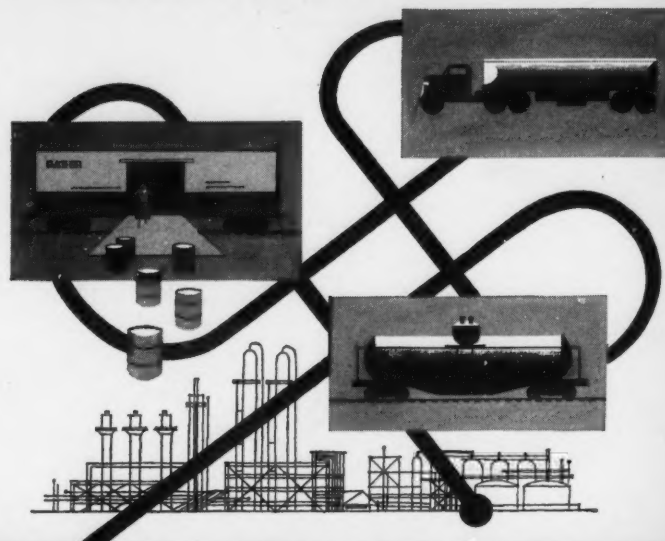
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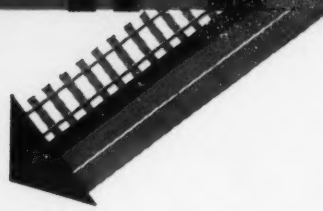


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